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Backup & Recovery™ 15 Home

User Manual

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Contents

Introduction 6

What's New in Backup & Recovery 15 6

Product Components 6

Features Overview 7

Features 7

User Friendly Fault Minimizing Interface 7

Backup Facilities 7

Restore Facilities 9

Copy Facilities 9

Partition/Hard Disk Management Facilities 9

Automatization Facilities 9

Auxiliary Facilities 9

Supported Technologies 10

Supported File Systems 11

Supported Media 11

Getting Started 11

System Requirements 11

Installation 12

First Start 13

Building Recovery Media 14

Booting from the Linux/DOS Recovery Media 14

Startup 14

Boot menu 15

Booting from the WinPE Recovery Media 17

Startup 17

Basic Concepts 18

System and Data Protection 18

File Backup versus Sector Backup 18

Backup Types 19

Backup Storage 21

Adaptive Restore 22

Paragon Hot Processing & Volume Shadow Copy Service 24

Offline versus Online Data Processing 24

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Paragon Hot Processing Technology 24
Volume Shadow Copy Service 25
pVHD Support 25
Dynamic Disks 25
GPT versus MBR 26
uEFI Boot Challenges 26
Apple Boot Camp 27
64-bit Support 27
Copy Operations 28
Drive Partitioning 28
Scheduling 29
Windows BitLocker 29
Windows Components 30
Interface Overview 30
General Layout 30
Tool Button 31
Ribbon Panel 31
Set View Button 31
Virtual Operations Bar 32
Express Mode Button 32
Disk Map 32
Disk and Partitions List 33
Context-sensitive Menu 34
Properties Panel 34
Status Bar 35
Settings Overview 35
Application Section 36
Backup Section 38
Partitioning Section 43
Include/Exclude Section 44
E-mail Notifications and Logging Section 47
Viewing Disk Properties 49
Viewing Image Properties 49
Using the Restore Wizard 49
Using the Archive Database 53

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Data Backup and Rescue **54**
Creating Backup Images 54
Restoring System and Data 57
Copy Tasks **62**
Cloning Hard Disks 62
Cloning Partitions 65
Partition Management **66**
Basic Partitioning Operations 66
Advanced Partitioning Operations 75
Changing Partition Attributes 77
Hard Disk Management **80**
Converting Dynamic MBR to Basic 80
Converting GPT to Basic MBR 81
Converting Basic MBR to GPT 81
Updating MBR 82
Changing Primary Slot 82
Task Scheduling **84**
Setting a Timetable 84
Managing Tasks 85
Creating a Scheduled Task 86
Scripting **87**
Extra Functionality **89**
View Partition/Hard Disk Properties 89
Volume Explorer 90
File Transfer Wizard 91
Mount Partition 93
Mount Archive 94
Test Surface 95
Check File System Integrity 96
Check Archive Integrity 96
Check Recovery Discs 99
Edit/View Sectors 100
Send Log Files 101
View Logs 101
Typical Scenarios **102**
Backup Scenarios **102**

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Creating the Backup Capsule 102
New Backup Format 104
Legacy Backup Format 121
Recovery Scenarios 151
New Backup Format 151
Legacy Backup Format 159
Fixing Boot Problems without Restore 182
Retrieving/Transferring Individual Files and Folders 187
System Migration Scenarios 194
Migrating system to a new HDD (up to 2.2TB in size) 194
Making system bootable on different hardware (P2P Adjust OS) 196
Migrating a Windows 7 vhd 202
Extra Scenarios for WinPE 203
Adding specific drivers 203
Configuring network 204
Saving log files 207
How to Work with Bitlocked Volumes 208
In Windows 208
In WinPE 210
Troubleshooter 212
Glossary 213

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Introduction

Paragon Backup & Recovery™ 15 Home is a complex disaster recovery solution. By including into this product the brand-new disk imaging technology that allows backing up directly to virtual containers (pVHD, VHD, VMDK), complete support of GPT/uEFI configurations, Windows BitLocker and the latest Windows 8.1, as well as the option to create an advanced WinPE or Linux based recovery environment on CD/DVD, flash, or in an ISO-file, the company has offered all the necessary facilities to build a bullet-proof shield against any disaster.

In this manual you will find the answers to many of the technical questions, which might arise while using the program.

Our company is constantly releasing new versions and updates to its software, that's why images shown in this manual may be different from what you see on your screen.

What's New in Backup & Recovery 15

- **Embedded Recovery Media Builder (RMB) 3.0**. Instead of two utilities downloaded from Paragon's website (BMB and RMB), the new RMB 3.0 is now embedded into the product. Combining the best of the two utilities, it can boast more options, usability, and stability:
  - Prepares Linux or WinPE-based bootable environment on a USB thumb drive or in an ISO image;
  - Doesn't obligatory require Windows Assessment and Deployment Kit (ADK) or Automated Installation Kit (WAIK) on Windows 7 and later platforms;
  - Can build WinPE-based media on Windows XP, Vista, Server 2003 if there's WAIK installed in the system;
  - Allows injecting additional drivers for storage devices, network controllers, USB controllers, or system during setup;
  - Enables to set up a network connection with a pre-mounted network share during setup;
  - Prepares hybrid (both, uEFI and BIOS compatible) 64-bit recovery environment on flash or in an ISO image.
- **File-level backup/restore for virtual containers** (pVHD, VHD, VHDX, VMDK). As promised, Paragon's innovative backup imaging technology has been further improved and now opens up the option of creating file-level virtual containers (full, incremental, as well as file complements), thus offering users rock-stable, high-performance technology to protect system and data not only on sector-level, but file-level as well. This means that the old PBF format will eventually leave the scene.
- **Predefined views**. The Windows 8 like streamlined, tile-oriented interface has been enhanced by predefined views, which enable to adjust the working environment to particular customer needs.

Product Components

In order to cope with different tasks, the product contains several components:

- **Windows based set of utilities** is the crucial part of the product. With the help of an easy to use launcher you may find and run tasks of any complexity in the field of data and system protection, hard disk partitioning and cloning, etc.
- **Linux/DOS based recovery environment** is a multi-platform bootable media that enables to run utilities under Linux or PTS DOS, and that way to get access to your hard disk for maintenance or recovery purposes. Both

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platforms have their strong sides, for instance Linux can boast support of FireWire (i.e. IEEE1394) or USB devices. It enables to burn CD/DVD discs. However there can be some difficulties with detecting new hardware. DOS in its turn has no problems of that kind but is limited in features. The Linux/DOS recovery environment requires no installation and can be of great help when the system fails to boot. Besides it offers a Windows XP like environment.

- **WinPE based recovery environment**. Especially for keen followers of Windows, our product offers the option to prepare a WinPE based bootable media. Unlike the Linux/DOS recovery environment it can boast an excellent hardware support and the same interface as the Windows version can. However its system requirements are much tougher.

Features Overview

This chapter dwells upon key benefits and technical highlights of the product.

Features

Let us list some of the features:

User Friendly Fault Minimizing Interface

- **Graphical representation of the data** to gain a better understanding.
- **A handy Launcher** to easily find and run the required tasks.
- **Comprehensive wizards** to simplify even the most complex operations.
- **A context sensitive hint system** for all functions of the program.
- **Previewing the resulting layout of hard disks before actually executing operations** (so-called virtual operations).

Backup Facilities

- **Archive Database** to help the user easily manage backup images (get properties, add, delete, mount, etc.).

This feature is only available for the Windows installation of the program.

- **Available location for backup images**:

  - *Backup to local mounted partitions*.

  - *Backup to local unmounted (without drive letter assigned) partitions*.

  - *Backup to an external mounted storage* to provide for a higher level of data protection and system independence.

  - *Backup to a special secured place on the hard disk called the Backup Capsule* that has an independent system layout (e.g. a separate partition) and will stay operable should the active file system be damaged. To avoid an accidental removing or unauthorized access of the backup data, this partition is hidden and thus cannot be mounted in the operating system.

  - *Backup to external media (CD/DVD)* to guarantee a high level of data protection as long as the backup media is kept secure.

  - *Backup to a network drive* to stand a better chance of success in case of a hard disk failure.

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- *Backup to an FTP/SFTP server* to provide a new level of system and data protection.

- **Bootable Backup Capsule** to get the choice to launch the Linux or PTS DOS recovery environment every time you start up the computer. With its help you will be able to run utilities under Linux or PTS DOS, and that way to get access to your hard disk for maintenance or recovery purposes.

For PBF images:

- **Smart Backup Wizard** to secure system and data with the minimal efforts possible. With a unique intelligent work algorithm and a highly intuitive user interface, you can easily back up exactly what you need - the whole system, e-mail databases (MS Outlook, Express, Windows Mail) media files or office documents of the My Documents folder, or any other files and folders.
- **Differential backup** to a sector image to only archive changes since the last full sector-based image, thus considerably saving the backup storage space. To restore this kind of backup you will require a full image and one of its differentials.
- **Incremental backup to a sector image** is a further way of optimizing the process of disk imaging. Unlike differentials, it may not only contain data changed since the time of creating a full sector-based archive, but one of its increments as well, thus allowing to save more time and the backup storage. Introduction of a special index file that stores backup meta-information minimizes time and resources to create this type of archives.
- **Incremental backup to a file image** to only archive changes since the last full or incremental file-based image. An incremental image is smaller and takes less time to create, but you will require the initial full image and all of its increments to restore the latest point of this kind of backup.
- **File backup to a sector image**. It is a unique technology on the market so far that bridges two principally different approaches of the data backup: the file-based backup and the disk imaging backup. With its help you can now create a sector-based backup of your system to get it back on track in minutes in case of a virus attack or a hardware malfunction and then just make file-based incremental images to the previously created sector-based backup to keep updated only information that is critical for you. Thus you will considerably save your system resources.
- **Cyclic Backup Wizard** to automate the backup of separate partitions. It is an ideal option if you want to establish a self-acting data protection system.

This feature is only available for the Windows installation of the program.

- **Synthetic backup** to change any property (merge a given differential image with its full image, split/un-split, compress/de-compress, etc.) of an existing backup image without carrying out a physical backup operation.

For virtual containers:

- **Backup to VD Wizard** to protect separate partitions or entire hard disks.
- **Incremental Backup to VD Wizard** to create incremental backup chains based on the full image.
- **File Complement to VD Wizard** to create a file-level incremental update to a sector-level virtual container.
- **Retention Wizard for VD** to automate the backup of separate partitions or entire hard disks. It is an ideal option if you want to establish a self-acting data protection system.

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Restore Facilities

- **Restore an entire disk, separate partitions or only files you need** from the previously created backup image (for PBF and virtual containers).
- **Restore with Shrink** to restore a backup image to a free block of smaller size taking into account only the amount of actual data of the image.
- Adaptive Restore to successfully migrate a Windows physical system to a different hardware platform (P2P) by allowing automatic injection of all required drivers and the other actions crucial for a migration of this kind.

This feature is only available for the bootable recovery environment.

Copy Facilities

- Partition/hard disk copy to successfully transfer all on-disk information including standard bootstrap code and other system service structures, thus maintaining the operating system's working capability.

Copy functionality can also be used as an alternative way of data protection.

Partition/Hard Disk Management Facilities

- Basic functions for initializing, partitioning and formatting hard disks (create, format, delete). Instead of the standard Windows disk tools, the program supports all popular file systems.
- Mount a partition (assign a drive letter) of any file system type to make it available for your operating system.
- Modify file system parameters (make active/inactive, hide/unhide, etc.).
- Undelete Partitions Wizard to recover an accidentally deleted partition.

Automatization Facilities

- Task scheduling to automate routine operations. It can be particularly effective when you have to repeat a sequence of actions on a regular basis.

Scheduling is only available for the Windows installation of the program.

- Scripting to make the program create a script of any set of operations you need. Besides support of all operations available in the interactive mode, the unattended mode provides some additional features, such as conditional execution, subroutines, repeatable iterations, disk/partition properties analysis, errors management, etc.

Auxiliary Facilities

- Conversion of basic MBR disks to basic GPT to enjoy all benefits of the newest partitioning scheme with minimal effort.

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- File Transfer Wizard to make such operations as transferring of files/directories or burning of them to CD/DVD as easy and convenient as possible. Providing access to Paragon backups as regular folders, it may also help to replace corrupted data from a previously created image in case of an operating system failure.
- Volume Explorer is a handy tool when you have different file systems on the disk, whether they contain an operating system or just data. Volume Explorer will let you explore a file system of any type and provide access to the necessary files and directories regardless of their security attributes.
- Check Integrity Wizards to check integrity of created .pbf images and virtual containers. The function allows distinguishing between valid and corrupted images before using them.
- Network Configuration Wizard to establish a network connection on a bootable recovery media either to save a backup of a partition/hard disk or just several files on a network computer or retrieve a previously made backup from a network computer for recovery purposes.
- Boot Corrector to fix most of the system boot problems that can be a result of a human factor, program error or a boot virus activity.

Boot Corrector is only available for the bootable recovery environment.

Supported Technologies

Along with using innovative technologies from outside, Paragon has developed a number of its own original technologies that make its products unique and attractive for customers:

- **Paragon Hot Backup™** technology to back up locked partitions and hard disks under Windows NT+ family operating systems providing both high operating efficiency as well as low hardware requirements.
- **Paragon Hot Copy™** technology to copy locked partitions and hard disks under Windows NT+ family operating systems providing both high operating efficiency as well as low hardware requirements.
- **Paragon Adaptive Restore™** technology to successfully migrate a Windows physical system to a different hardware platform (P2P).
- **Paragon Power Shield™** technology to provide data consistency in case of a hardware malfunction, power outages or an operating system failure.
- **Paragon UFSD™** technology to browse partitions of any file system including hidden and unmounted, modify and copy files and folders, etc.
- **Paragon Restore with Shrink™** technology to restore a backup image to a free block of smaller size taking into account only the amount of actual data of the image.
- **Paragon BTE™** technology to set tasks for execution during the system restart, thus saving from the need to use a bootable media when modifying system partitions.
- **Microsoft Volume Shadow Copy Service** (VSS) to provide the copy/backup infrastructure for the Microsoft Windows XP/Vista/7/Server 2003/2008 operating systems. It offers a reliable mechanism to create consistent point-in-time copies of data known as shadow copies. Developed by Microsoft in close cooperation with the leading copy/backup solution vendors on the market, it is based on a snapshot technology concept.
- **Microsoft Dynamic Disk** (simple, spanned, striped, mirrored, RAID-5) to offer more management flexibility without the partition limitation of basic disks. Dynamic storage can be particularly beneficial for large-scale businesses when dealing with many physical hard disks involving complex setup.

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- **GUID Partition Table** (GPT). It is the next generation of a hard disk partitioning scheme developed to lift restrictions of the old MBR. GPT disks are now supported by Windows Vista/7, Server 2008, Mac OS X and Linux.

Supported File Systems

- Full read/write access to FAT16/FAT32 partitions.
- Full read/write access to NTFS (Basic Disks) under Windows, Linux and PTS DOS. Compressed NTFS files are also supported.
- Full read/write access to Ext2FS/Ext3FS/Ext4FS partitions.
- Full read/write access to reFS partitions.
- Limited read/write access to Apple HFS+ partitions.

Unfortunately, support of non-Roman characters for the HFS+ file system is unavailable at the moment. The company is about to implement it in the nearest future.

Supported Media

- Support of both MBR and GPT hard disks (2.2TB+ disks included)
- IDE, SCSI and SATA hard disks
- SSD (Solid State Drive)
- AFD (Advanced Format Drive)
- Non-512B sector size drives
- CD-R, CD-RW, DVD-R, DVD+R, DVD-RW, DVD+RW, DVD-R, DVD+R double layer and also Blu-ray discs
- FireWire (i.e. IEEE1394), USB 1.0, USB 2.0, USB 3.0 hard disks
- PC card storage devices (MBR and GPT flash memory, etc.)

Getting Started

In this chapter you will find all the information necessary to get the product ready to use.

System Requirements

For the Windows installation package

- Windows XP SP3
- Windows Vista
- Windows 7
- Windows 8
- Windows 8.1

Additional requirements:

- To install and run the product the target OS should have Visual Studio C++ 2010 Runtime Library installed (comes with the installation package – you will be prompted to install it, if it's not been found in the system).

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For the Linux bootable environment

- Intel Pentium CPU or its equivalent, with 300 MHz processor clock speed
- 256 MB of RAM
- SVGA video adapter and monitor
- Keyboard
- Mouse

For the WinPE bootable environment

- Intel Pentium III CPU or its equivalent, with 1000 MHz processor clock speed
- At least 1 GB of RAM
- SVGA video adapter and monitor
- Keyboard
- Mouse

Additional requirements

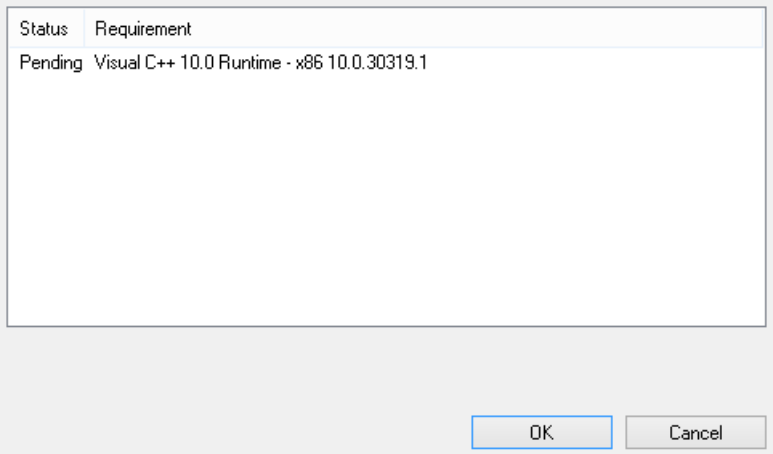
- Network card to send/retrieve data to/from a network computer
- Recordable CD/DVD drive to burn data to compact discs
- External USB hard drive to store data.

Installation

Before the installation, please make sure the systems requirements are met. If everything is OK, please do the following to install the product:

In case there is some previous version of the program installed on the computer, the program will offer the user to uninstall it first.

1. Click on the supplied setup file to initiate the installation. First your system will be checked for the presence of Visual Studio C++ 2010 Runtime Library and if not found, you will be prompted to install it (comes with the installation package). Click **Install** to continue.



2. The Welcome page will inform that the application is being installed. Click **Next** to continue.

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3. Please Read Paragon License Agreement carefully and then select the appropriate option to accept. Otherwise you won't be able to proceed with the installation. By clicking the **Print** button, the license agreement may also be printed out.
4. Provide your product key and serial number.
5. On the Customer Information page you are to provide the standard customer information, i.e. a user name and an organization. Besides you need to decide whether to make the program available for all users of this computer (if several) or only for the current one.
6. On the next page, click **Change** to install the utility to a different location (by default **C:\Program Files\Paragon Software\ Paragon Backup & Recovery 15 Home Edition**). Otherwise click **Next** to continue.

Do not install the program on network drives. Do not use Terminal Server sessions to install and run the program. In both cases, the program functionality will be limited.

7. On the Ready to Install the Program page click **Install** to start the installation or **Back** to return to any of the previous pages and modify the installation settings.
8. The Final page reports the end of the setup process. Click **Finish** to complete the wizard.

First Start

To start Paragon Backup & Recovery 15 under Windows, please click the Windows Start button and then select **Programs > Paragon Backup & Recovery™ 15 > Paragon Backup & Recovery™**.

The program provides wide opportunities in the field of hard disk structure modification, so just to be on the safe side, please make a backup of your data before carrying out any operation.

The first component that will be displayed is called the Express Launcher. Thanks to a well thought-out categorization and hint system, it provides quick and easy access to wizards and utilities that we consider worth using on a regular basis. With its help you can also start up the traditional launcher, the help system or go to the program's home page.

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To know more on how to handle the product's interface and accomplish typical operations, please consult the Windows Components chapter.

Building Recovery Media

WinPE- and/or Linux-based recovery environments should be prepared on-site with Paragon's Recovery Media Builder**.** To know more on the subject, please consult documentation that comes with this utility.

Booting from the Linux/DOS Recovery Media

The Linux/DOS recovery environment can be used to boot your computer into Linux or PTS DOS to get access to your hard disk for maintenance or recovery purposes. It also has the PTS DOS safe mode, which may help in a number of non-standard situations such as interfering hardware settings or serious problems on the hardware level. In this case, only basic files and drivers (such as hard disk drivers, a monitor driver, and a keyboard driver) will be loaded.

Startup

To start working with the Linux/DOS recovery environment, please take the following steps:

1. Start up the computer from our Linux/DOS recovery media.

Please use Recovery Media Builder to prepare Paragon's recovery environments on CD/DVD, flash, or in an ISO-image.

To automatically boot from the recovery media please make sure the on-board BIOS is set

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up to boot from CD/USB first.

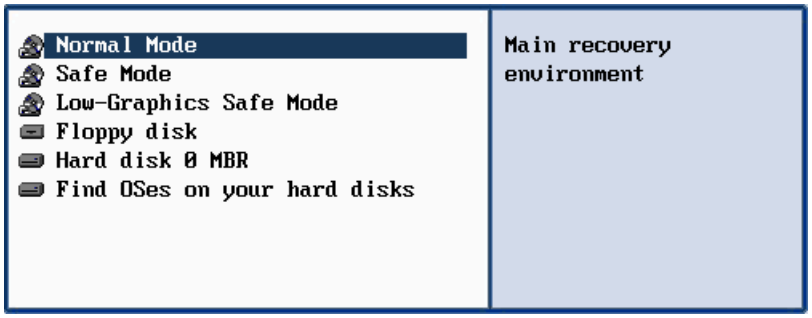
2. Launch a boot mode you need (Normal, Safe, Low-Graphics Safe) in the Boot menu.

By default the Normal Mode will be automatically initiated after a 10 second idle period.

3. Click on the required operation to start. Hints on the selected at the moment item will help you make the right choice.
4. Consult the help system by pressing **ALT+F1** to know more on the subject.

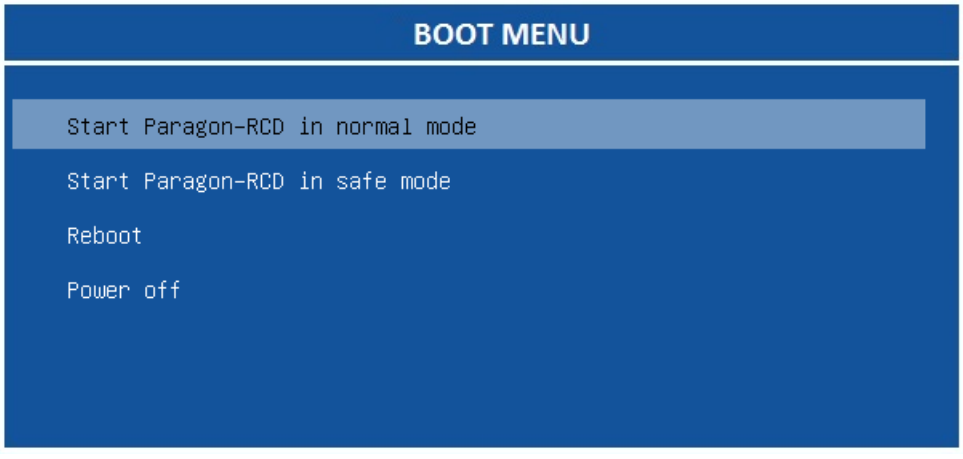
Boot menu

32-bit environment



- **Normal Mode**. Boot into the Linux normal mode. This mode uses the full set of drivers (recommended);
- **Safe Mode**. Boot into the PTS DOS mode. This mode can be used as an alternative of the Linux normal mode if it fails to work properly;
- **Low-Graphics Safe Mode**. Boot into the PTS DOS safe mode. In this case, only the minimal set of drivers will be included, like hard disk, monitor, and keyboard drivers. This mode has simple graphics and a simple menu;
- **Floppy Disk**. Reboot the computer from a system floppy disk;
- **Hard Disk 0**. Boot from the primary hard disk;
- **Find OS(s) on your hard disks**. The program will scan hard disks of your computer to find any bootable operating system.

64-bit environment



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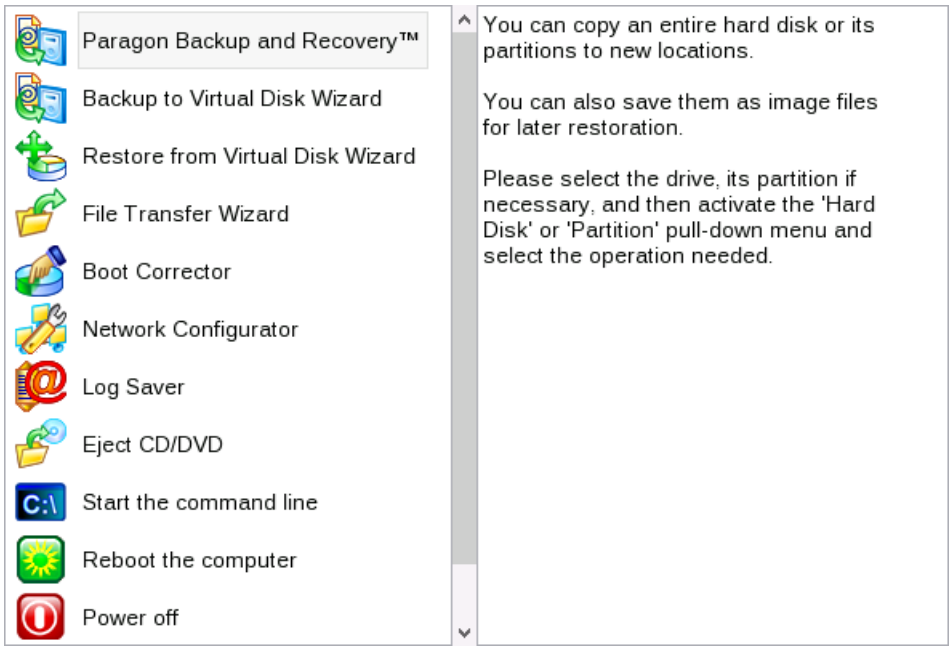
- **Normal Mode**. Boot into the Linux normal mode. This mode uses the full set of drivers (recommended);
- **Safe Mode**. Boot into the PTS DOS mode. This mode can be used as an alternative of the Linux normal mode if it fails to work properly;
- **Reboot**. Restart the computer.
- **Power off**. Shut down the computer.

While working with the recovery environment you might experience some inconvenience caused by possible video artifacts. It is just a result of changing video modes and in no way will affect the program functionality. If this is the case, please wait a bit and everything will be OK.

Normal Mode

When the Normal mode is selected, the Linux launch menu appears:


Paragon Backup and Recovery™
Backup to Virtual Disk Wizard
Restore from Virtual Disk Wizard
File Transfer Wizard
Boot Corrector
Network Configurator
Log Saver
Eject CD/DVD
Start the command line
Reboot the computer
Power off
You can copy an entire hard disk or its partitions to new locations.
You can also save them as image files for later restoration.
Please select the drive, its partition if necessary, and then activate the 'Hard Disk' or 'Partition' pull-down menu and select the operation needed.

- **Backup & Recovery** (enables to run wizards and dialogs, to specify program settings, to visualize the operating environment and the hard disk configuration);
- **Backup to Virtual Disk Wizard** (enables to back up hard disk and partitions to VD);
- **Restore from Virtual Disk Wizard** (allows restoring hard disks and partitions from VD);
- **File Transfer Wizard** (allows coping files/folders to another disk or a partition as well as recording them to CD/DVD);
- **Boot Corrector** (helps to correct the Windows System Registry without Windows being loaded);
- **Network Configurator** (enables to establish a network connection under Linux);

If you are going to use network resources, first launch the Network Configuration Wizard to establish a network connection.

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- **Log Saver** (helps to collect and send the necessary log files to the Technical Support);
- **Eject CD/DVD**;
- **Command Line** (allows experienced users to execute any operation);
- **Reboot the computer**;
- **Power off the computer**.

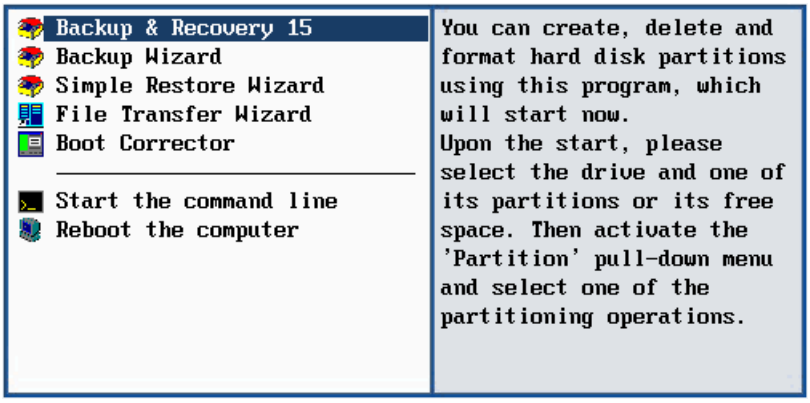
To move within the menu, please use the arrow keys of the computer keyboard.

Safe Mode

When the Safe mode is selected, the PTS DOS launch menu appears. It has nearly the same functionality as for the Normal mode except for the **Network Configurator** and **Log Saver** commands. Besides due to certain limitations of the PTS DOS environment, there is no possibility to burn CD/DVD discs.

Low Graphics Safe Mode

When the Low Graphics mode is selected, the PTS DOS launch menu appears. It has the same functionality and looks similar to the Safe mode but graphically simpler.


Backup & Recovery 15
Backup Wizard
Simple Restore Wizard
File Transfer Wizard
Boot Corrector
Start the command line
Reboot the computer
You can create, delete and format hard disk partitions using this program, which will start now.
Upon the start, please select the drive and one of its partitions or its free space. Then activate the 'Partition' pull-down menu and select one of the partitioning operations.

Booting from the WinPE Recovery Media

The WinPE recovery environment can be a real alternative to the Linux/DOS recovery environment. Providing nearly the same level of functionality it offers an excellent hardware support and the same interface as the Windows version does.

Startup

To start working with the WinPE recovery environment, please take the following steps:

1. Start up the computer from the WinPE recovery media.

Please use Recovery Media Builder to prepare Paragon's recovery environments on CD/DVD, flash, or in an ISO-image.

To automatically boot from the recovery media please make sure the on-board BIOS is set up to boot from CD/USB first.

2. Once it has been loaded, you will see the Universal Application Launcher. In general it enables to run components of the product, load drivers for undefined hardware or establish a network connection.

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3. Click on the required operation to start. Hints on the selected at the moment item will help you make the right choice.
4. Consult the help system by pressing **ALT+F1** to know more on the subject.

The WinPE based recovery environment offers excellent hardware support. However in case it doesn't have a driver for your disk controller, your hard disks will be unavailable. Please consult the Adding specific drivers scenario to know how to tackle this issue.

Basic Concepts

This chapter explains terms and ideas that show how the program works. To understand these helps to obtain a general notion of the operation performance and makes it easier for the user to operate the program.

System and Data Protection

The data protection issue is a growing cause of worrying for more and more people today. Indeed, it is hardly to find a person who will be particularly happy when all precious information on the hard disk is irreversible lost as a result of its malfunction. So how this tragedy can be prevented?

File Backup versus Sector Backup

Since the advent of the computer age people were in the search of ways to guarantee data safety. As a result we've got now two principal approaches: the file-based backup and the sector-based backup. The main difference between the two lies in the way data is treated.

A sector-based backup operates with an image (or a snapshot) of the whole disk system or its separate partitions. It not only includes the contents of all user-made files, but additionally contains the exact structure of directories, information

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about file allocation, file attributes and other related data. Thus it enables to successfully process system or encrypted partitions of any file system type, no matter what kind of information they contain.

In contrast, a file-based backup takes into account a file system structure and only functions on a file or folder level. So it is very efficient when archiving separate files or folders, but in no way will help you back up a system partition.

You should understand pretty well that each of the two approaches is only good when properly chosen. In the comparison table below you can see when this or that approach will suit you at most.

Sector-Based Backup	File-Based Backup
Merits	
It does not dependent on a particular file system. Thus it can successfully process system or encrypted partitions of any file system type, no matter what kind of information they contain.	Functioning on a file/folder level, it is ideal for archiving separate files or folders.
It can create an exact image of a partition, including its service data. Thus it is ideal for a backup/restore of a system partition or a fast deployment to a bunch of identical computers.	It enables to automatically build up contents of the future backup image by using an advanced system of filters.
	It allows archiving data of the same volume with different backup policies.
	It is easy and efficient when creating backup chains.
Demerits	
Resulted backup images may contain a lot of redundant data.	It depends on a file system structure, so you won't be able to process unknown file systems.
It is ineffective when trying to maintain a backup chain, especially when little amount of data is being changed.	It cannot be used to back up a system partition.
	It is much slower when processing large amount of data.

Backup Types

At the present moment the market is offering various types of backup imaging to meet the needs of any user. Besides supporting them all, our program offers a unique backup type, called File Increment to a Sector Backup.

Full, Differential, and Incremental Sector Backups

A full sector-based backup image includes all contents of a partition or a hard disk at the moment of its creation. If you roll back your system to the initial state on a regular basis, that's exactly what you're looking for. But if you want to have multiple backup archives of the same partition reflecting certain time stamps, unchanged data will inevitable be duplicated in all archives and take additional space on backup media. To tackle this issue there has been developed a supplementary technique called Differential Sector Backup.

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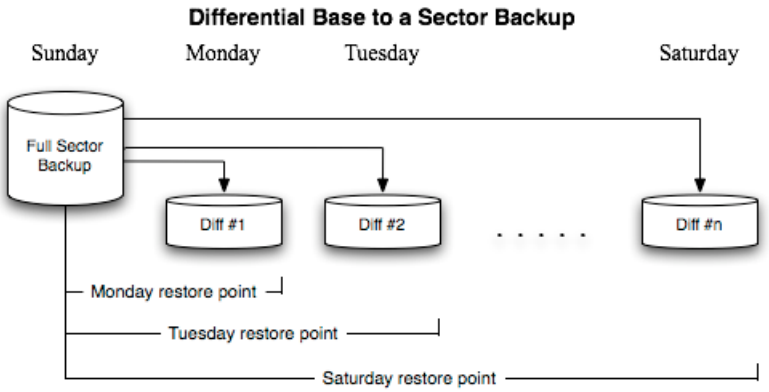
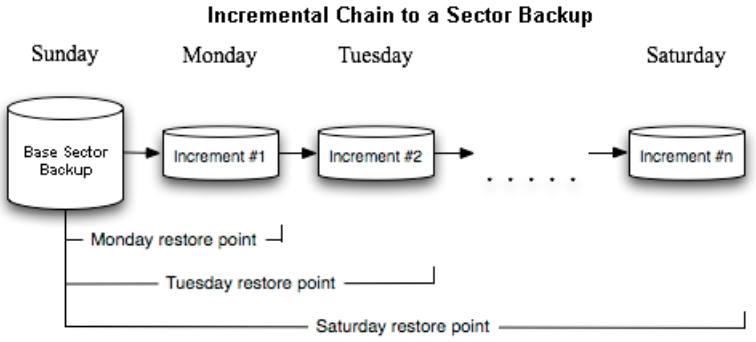
A differential archive only contains data changed since the time of creating a full archive, which forms a base (or a parental image) in this case, thus considerably saving your system resources. It is realized by the exact bit-wise comparison of the previous partition's data (saved in the parental image) with the current data (that is actually the partition itself). To restore this kind of backup you will require a full image and one of its differentials, what is very convenient.



This function is only available for single primary and logical partitions.

Incremental archive is a further way of optimizing the process of disk imaging. Unlike differentials, it may not only contain data changed since the time of creating a full sector-based archive, but one of its increments as well, thus allowing to save more time and the backup storage. The main principal here is the shorter the interval between increments, the less data is backed up. In general this type of backup is great except for one thing – when you restore an incremental archive there will be processed the initial full image and all increments between, which depending on the size of your backup chain, may take plenty of time. Anyway unlike backups, the restore operation is an emergency, which might not happen at all.

Paragon's incremental sector-based archive employs an innovative technology that significantly improves the backup performance. Its core is in introduction of a special index file (.pfi) that keeps meta-information on the corresponding incremental image. It's much smaller than the image itself and is used to calculate the difference between the current and previous state of a backup object. Thus, when you're going to do an increment to a full archive of your system partition stored on the network, only its index file is processed over the net (a couple of megabytes at most), not the entire image, which minimizes both, the network traffic and backup time. Another new thing is change of a backup format – all increments are saved in .vhd (Virtual Hard Drive) containers.



Please note that the current version of the product has a number of limitations regarding sector-based increments:

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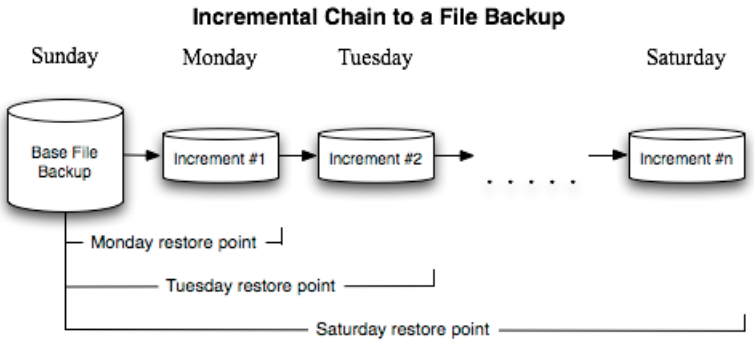
- Increments can only be created for full archives of the new type (with a .pfi index file). Any of our flagship products since Backup & Recovery 12 supports this functionality;
- Increments can only be created for full archives stored on a local mounted drive or a network share;
- Increments cannot be created for archives of entire GPT disks;
- Increments can only be restored under Windows (if no restart is needed) or WinPE;
- Increments cannot be processed with the Synthetic Backup Wizard;
- Increments cannot be processed with the Check Archive Integrity Wizard;
- Increments cannot be processed with the Create File Complement Wizard;
- Increments cannot be browsed in Volume Explorer;
- Increments can only be used with our software;
- Increments cannot be compressed;
- Increments cannot be encrypted;
- Increments cannot be splitted.

Full and Incremental File Backups

A full file-based archive only contains files and folders. It is really efficient when backing up an e-mail database or particular documents, as no redundant data is processed. But if you care about maintaining a files history, you can benefit from one more supplementary technique called Incremental File Backup.

An incremental archive only contains data changed since the time of creating a full or incremental file-based archive. It is smaller and takes less time to create, but you will require the initial full image and all of its increments to restore the latest point of this kind of backup.



File Increment to a Sector Backup

File Increment to a Sector Backup is a unique technology on the market so far that bridges two principally different approaches of the data backup: the file-based backup and the sector-based backup. With its help you can now create a sector-based backup of your system to get it back on track in minutes in case of a virus attack or a hardware malfunction and then just make file-based incremental images to the previously created sector-based backup to keep updated only information that is critical for you. Thus you will considerably save your system resources.

Backup Storage

Our program supports several techniques of storing backup images. Let's take a closer look at them all to understand what kind of storage is able to provide better security:

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- You can place a backup image to a local partition. Despite the fact that it is the most convenient way, try not to use it. You can delete your backup just by accident or lose it as a result of a hardware malfunction, or a virus attack;
- You can place a backup image to an external mounted storage to provide for a higher level of data protection and system independence;
- You can place a backup image to a special secured place on the hard disk called the Backup Capsule that has an independent system layout (e.g. a separate partition) and will stay operable should the active file system be damaged. To avoid an accidental removing or unauthorized access of the backup data, this partition is hidden and thus cannot be mounted in the operating system. However it won't help you in case of a hardware malfunction;
- You can place a backup image to external media (CD/DVD) to guarantee a high level of data protection as long as the backup media is kept secure;
- You can place a backup image to a network drive to stand a better chance of success in case of a hard disk failure. Moreover, by storing it on a special-purpose server you may be pretty sure nothing will happen to it;
- Finally you can place a backup image to an FTP server to provide a new level of system and data protection.

Known Issues on FTP/SFTP

1. You need to check out yourself Windows Firewall or programs of this kind let our program work with the required port (21 by default).
2. You cannot restore data selectively (with Restore Wizard) from an FTP/SFTP server.
3. You can browse an FTP server in the passive mode only.
4. Parallel access to several FTP/SFTP servers is limited - only one password for all servers is available.

Adaptive Restore

Technology Background

Windows family operating systems are notorious for their excessive sensibility to hardware, especially when it turns to replacement of such a crucial device as HDD controller or motherboard – actually Windows will most likely fail to boot as a result of this operation.

In 2008 our company came with an exclusive technology called Paragon Adaptive Restore™. Initially aimed at restore of Windows Vista or Server 2008 from a backup to a different hardware configuration, its current realization, available in the P2P Adjust OS Wizard, enables to make any Windows OS since XP bootable on dissimilar hardware by allowing automatic injection of all required drivers and the other actions crucial for this type of migration.

Technology Concept

Let's take a closer look at how Paragon Adaptive Restore works.

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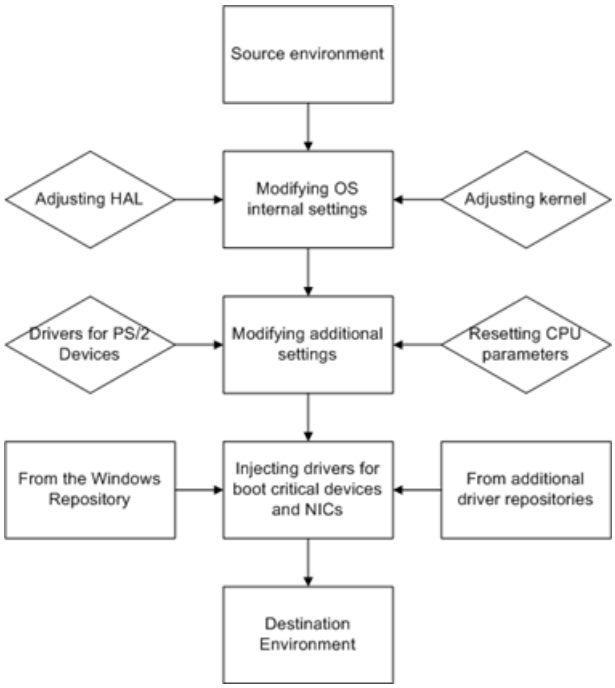

As you see, successful migration of a Windows system to a different hardware platform involves several actions:

1. **Change of the Windows kernel settings according to the new configuration**. The program detects the given hardware profile and automatically installs the appropriate Windows HAL and kernel.
2. **Installation of drivers for boot critical devices**. The program detects those without drivers and automatically tries to install lacking drivers from the built-in Windows repository. If there's no driver in the repository, it prompts the user to set a path to an additional driver repository, strongly recommending not to proceed until all drivers for the found boot critical devices are installed. In case drivers for these devices are installed, but disabled, they will be enabled.
3. **Installation of drivers for a PS/2 mouse and keyboard**. This action will only be accomplished for Windows XP/Server 2003.
4. **Installation of drivers for network cards**. The program detects those without drivers and automatically tries to install lacking drivers from the built-in Windows repository. If there's no driver in the repository, it prompts the user to set a path to an additional driver repository.

These actions guarantee a Windows system will start up on dissimilar hardware. After the startup, Windows will initiate reconfiguration of all Plug'n'Play devices. It's a standard procedure, so please don't worry and prepare the latest drivers at this step to get the most out of the system.

Though all Windows systems have built-in driver repositories, please be prepared to have additional drivers when dealing with Windows XP/Server 2003, because for these systems they are very modest.

Technology Application

Let's consider a number of situations when the Adaptive Restore technology can help you out:

- If you need to migrate to a different hardware platform with minimal effort
- If you need to upgrade hardware while keeping all programs and settings intact
- If you need to replace failed hardware and cannot find an exact match for original system specifications

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Known Issues

1. After transferring Microsoft Vista and later versions to different hardware, you will need to re-activate license of the system. It's normal behavior as these systems keep tracking any change of hardware. Re-activation is legally justified in this case, as you transfer your system to another PC.
2. If you've installed several operating systems on one partition, we can only add drivers to the latest version of OS. Microsoft highly recommends that you install an operating system on a separate partition.
3. Please note drivers are not cached during selection. That's why if you select a driver to add to the system, but it's already unavailable during the operation, the program will end the operation with an error.

Paragon Hot Processing & Volume Shadow Copy Service

Offline versus Online Data Processing

In the course of time there have been developed various methods of data processing. Despite different work concept, all of them can be divided into two principal groups: offline (cold) and online (hot) data processing techniques.

As the name infers, offline data processing can only be accomplished when the data is in consistent state (the operating system and all the applications are completely shut down). Actually it is the most preferable way of image creation or data cloning, since software can obtain an exclusive right to process data that guaranties high level of operating efficiency. However, the offline data processing is absolutely out of question when dealing with 24/7 production environments.

In contrast, online data processing enables to create a consistent snapshot even as the data is currently modified. It is particularly useful for systems with high availability requirements, but it won't be accomplished until all active transactions are complete. The point is to provide a coherent state of all open files and databases involved in a process, taking into account that applications may still keep writing to disks. As a result an online data processing cannot boast high operating speed.

Our program supports both offline and online methods of data processing. As far as online method is concerned it offers its own hot processing algorithm together with the possibility to use snapshot technologies provided by the Microsoft VSS framework.

Paragon Hot Processing Technology

Paragon Hot Processing is an online copy/backup technology for Windows NT+ family operating systems. Developed back in 2001, nowadays it is integrated with all copy/backup solutions offered by the company.

Paragon Hot Processing is not exactly a snapshot technology, though it has much in common with it. During an online copy/backup, the program uses the kernel mode driver HOTCORE.SYS to intercept and control disk write activity of applications and the operating system. The hotcore driver as an integral part of the program is installed during the setup procedure (that's why the system reboot is required to complete the setup procedure). For the most part the driver is in the idle mode until it is activated with the program. While in this mode it bypasses any calls having no effect on the overall system performance, but a few kilobytes of the system memory.

Paragon Hot Processing technology offers copy/backup of locked partitions and hard disks under Windows NT+ family operating systems providing both high operating efficiency as well as low hardware requirements.

It is not recommended to use Paragon Hot Processing with active SQL Server, Exchange or Oracle databases since the backup image contents may be corrupted.

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Volume Shadow Copy Service

Microsoft Volume Shadow Copy Service (VSS) is designed to provide the copy/backup infrastructure for the Microsoft Windows XP/Vista/Server 2003/2008 operating systems. It offers a reliable mechanism to create consistent point-in-time copies of data known as shadow copies. Developed by Microsoft in close cooperation with the leading copy/backup solution vendors on the market, it is based on a snapshot technology concept.

Initiated by a VSS aware copy/backup utility, VSS creates snapshots for the selected volumes and represents them as virtual read-only devices, called volume shadow copies. Once the shadow copies are created, the copy/backup utility starts processing the data while applications keep writing to original volumes.

Unlike Paragon Hot Processing the VSS technology provides a unique possibility to make a synchronous snapshot of multiple volumes. This very feature can be particularly beneficial when backing up active SQL Server 2003, Exchange 2003 or Oracle databases located on multiple volumes the way it is recommended by Microsoft to improve the level of database performance and reliability, thus providing 100-percent data consistency.

To use VSS it is necessary to have a mounted 300 MB+ NTFS partition.

pVHD Support

Paragon introduces a pVHD (Paragon Virtual Hard Drive) format – a special VHD, optimized for storing backups of virtual and physical machines. It's very efficient in handling incremental chains, data de-duplication and synchronization. pVHD allows obtaining backups that are up to four times smaller than original backup objects.

In the current version of the product backup images can be made either in the old PBF or the new pVHD. Please note that the pVHD support has a promotional goal. In future releases pVHD will gradually take the primary role.

Below is the list of wizards that allow working with pVHD:

- Backup to VD Wizard (Linux, Windows, WinPE);
- Incremental Backup to VD Wizard (Linux, Windows, WinPE);
- File Complement to VD Wizard (Linux, Windows, WinPE);
- Restore from VD Wizard (Linux, Windows, WinPE);
- Check VD Integrity Wizard (Windows, WinPE);
- Retention Wizard for VD (Windows).

What you get by using pVHD:

- Incremental imaging works much faster and rock-stable in comparison with the old PBF;
- Only pVHD images can be used to do immediate virtualization;
- With the new backup technology, available for customers as a new backup image format pVHD, Paragon has also achieved easy support of any virtual containers (VMDK, VHD, VHDX).

Dynamic Disks

As you probably know, MS-DOS, Microsoft Windows 95/98/Me/NT/2000/XP/Vista/Server 2003/2008 support four primary partitions per physical hard disk, one of which can be extended. Certainly there is the possibility to create logical drives within the extended partition. Such types of disks are called basic. Windows XP Professional, Windows 2000, Windows Vista and Windows Server 2003/2008 follow the same strategy: You can have a maximum of four

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primary partitions, one of which can be an extended partition with logical drives. However, these operating systems also introduce a new disk configuration type - dynamic disk - which must be understood to effectively configure and manage hard disks.

Dynamic disk is a physical disk that doesn't use partitions or logical drives. Instead, it contains only dynamic volumes. Regardless of what format you use for the file system, only Win2K computers can access dynamic volumes directly. However, computers that aren't running Win2K can access the dynamic volumes remotely when connected to the shared folders over the network.

Dynamic disks can co-exist on a system with basic disks. The only limitation is that you cannot mix Basic and Dynamic disks on the same hard drive.

There are five types of dynamic volumes: simple (uses free space from a single disk), spanned (created from free disk space that is linked together from multiple disks), striped (a volume the data of which is interleaved across two or more physical disks), mirrored (a fault-tolerant volume the data of which is duplicated on two physical disks, and RAID-5 volumes (a fault-tolerant volume the data of which is striped across an array of three or more disks).

With dynamic storage, you can perform disk and volume management without the need to restart Windows.

Limitations:

- Dynamic disks are not supported on portable computers.
- Dynamic disks are not supported on Windows XP Home Edition-based computers.
- You cannot create mirrored volumes or RAID-5 volumes on Windows XP Home Edition, Windows XP Professional, or Windows XP 64-Bit Edition-based computers.

Thus, the dynamic disk is a new way of looking at hard disk configuration. Dynamic disks offer you more management flexibility without the partition limitation of basic disks. Dynamic disks can contain an unlimited number of volumes, but they cannot contain partitions or logical drives. Dynamic storage can be particularly beneficial for large-scale businesses when dealing with many physical hard disks involving complex setup.

GPT versus MBR

GUID Partition Table (GPT) is the next generation of a hard disk partitioning scheme developed to lift restrictions of the old MBR. Being a part of the Extensible Firmware Interface (EFI) standard proposed by Intel to replace the outdated PC BIOS, it offers a number of crucial benefits:

- Up to 128 primary partitions for the Windows implementation (only 4 in MBR);
- The maximum allowed partition size is 18 exabytes (only 2 terabytes in MBR);
- More reliable thanks to replication and cyclic redundancy check (CRC) protection of the partition table;
- A well defined and fully self-identifying partition format (data critical to the platform operation is located in partitions, but not in un-partitioned or hidden sectors as this is the case with MBR)

uEFI Boot Challenges

Introduced back in 2005 by Intel to lift restrictions of the old MBR (Master Boot Record) and PC BIOS (Basic Input/Output System), uEFI (Unified Extensible Firmware Interface) is now a recommended platform for new 64-bit Windows 8 computers. And the reason is easy to catch – besides other unique features impossible for the traditional tandem of BIOS+MBR, only a uEFI-based platform enables to accommodate Windows OS on a partition larger than 2.2TB.

Despite all uEFI advantages however, it has one quite naughty issue: a pretty standard operation with a bootable device for instance involving its connection to another SATA port results in unbootable Windows. You'll get the same result if

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trying to boot from a cloned system hard disk or from a restored hard disk. All these problems originate from the way uEFI+GPT bundle is organized.

Microsoft provides how-to guides to tackle this type of problems, but they demand a great deal of experience from the user, involving the use of the **cmd**, **diskpart** and **bcdedit** tools.

Paragon has a better way! Introducing an elegant technology, realized at the user side as one simple option, you can define a system GPT volume you're willing to boot from.

Below is a list of wizards where the uEFI switch boot device option can be found:

- Copy Hard Disk Wizard;
- Copy Partition Wizard;
- Restore Wizard;
- Migrate OS to SSD Wizard;
- Boot Corrector.

The uEFI switch boot device option is only available through the 64-bit WinPE media at the moment.

Apple Boot Camp

Boot Camp is a special utility to help you set up a dual boot system (Mac OS X and 32-bit Windows XP/Vista) on Intel-based Macs. It enables to securely re-partition your hard disk (resize an existing HFS+ partition to create a separate partition for Windows) and then launch the installation process. With Boot Camp all the necessary drivers will be at your disposal. Moreover after Windows has been installed it will serve as a boot manager to choose what operating system to start up.

It is strongly recommended not to modify the hard disk configuration with Windows Disk Manager. Otherwise it may lead to unexpected consequences, right up to BSOD and inability to boot in Windows XP/Vista. Please use our program to correctly update both MBR and GPT.

64-bit Support

The bulk of software today is written for a 32-bit processor. It can meet the requirements of almost any end user. However that is not the case when dealing with servers processing large amounts of data with complex calculations of very large numbers. That is where 64-bit architecture comes into play.

It can boast improved scalability for business applications that enables to support more customer databases and more simultaneous users on each server. Besides a 64-bit kernel can access more system resources, such as memory allocation per user. A 64-bit processor can handle over 4 billion times more memory addresses than a 32-bit processor. With these resources, even a very large database can be cached in memory.

Although many business applications run without problems on 32-bit systems, others have grown so complex that they use up the 4 GB memory limitation of a 32-bit address space. With this large amount of data, fewer memory resources are available to meet memory needs. On a 64-bit server, most queries are able to perform in the buffers available to the database.

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Some 32-bit applications make the transition to the 64-bit environment seamlessly others do not. For instance, system-level utilities and programs that provide direct hardware access are likely to fail. Our program offers a full-fledged support of the 64-bit architecture providing fault-tolerant work for such system dependent modules as Hot Processing.

Copy Operations

Hard drive duplication nowadays is becoming highly popular among PC users. That is due to some definite advantages it can offer. First of all, many people clone hard disks just to back up data for security reasons. The present day copy utilities enable to successfully transfer all on-disk information including standard bootstrap code and other system service structures, thus maintaining the operating system's working capability. In case of a system malfunction, the user can get the system back on track in minutes. No additional configuration is required, what is very convenient.

The second possible application is the upgrade of a hard disk to a new one. The capacity of a modern hard drive doubles every two years, thus opening up new possibilities for software developers. As a result programs become more complicated and require considerable amount of free space. One day the user realizes that there is no more free space left on the hard disk and the only way out is to upgrade. Usually that means that besides purchasing a new hard disk, the user is to face a large re-installation procedure spanning several days of tedious work. But all of this can be avoided just by copying the contents of the old hard disk to a new one proportionally resizing the partitions.

And the last but not least is the copying of hard disks for cloning purposes. It may be of great use when setting up similar computers. There is no need for a system administrator to install an operating system from scratch on every one of them. It is enough just to configure one and then clone it to the others.

Drive Partitioning

As you probably know a hard drive is to be split into one or more partitions, since it cannot hold data until it is carved up and space is set aside for an operating system. Until recently most PCs used to have just one partition, which filled the entire hard disk and contained an OS. The situation has changed however, thanks to new cost-effective high capacity hard drives, thus opening up numerous possibilities for PC users, such as editing video, archiving music, backing up CD images, etc. Huge increase in space is great, but it poses a number of problems, most important of which are effective data organization and speed.

Large drives are always going to take longer to search than smaller volumes, and an operating system is going to have its work cut out both finding and organizing files. It is for this reason that many people decide to invest in multiple hard drives, but there is an easy solution – drive partitioning. Partitioning lets you divide a single physical drive into a number of logical drives, each of which servers as a container with its own drive letter and volume label, thus enabling the operating system to process data more efficiently. Besides partitioning makes it possible to organize data so that it is easy to find and manage. You can set aside, for instance, 40 GB of a 160 GB hard drive for the OS, 70 GB for storing video and another 50 GB for your favorite music collections to provide transparent data storage.

It is also worth mentioning to that with a hard drive properly partitioned, such routine operations as files de-fragmentation or consistency check will not be that annoying and time-consuming any more.

By detaching the OS from the rest of the data you can tackle one more crucial issue – in case of a system malfunction, you can get the system back on track in minutes by recovering it from a backup image located on the other partition of the hard drive.

But that is not all drive partitioning may be used for. If you are willing to play games in Windows while browsing the Internet in Linux, 100-percent sure that no virus will attack your PC, drive partitioning is a necessity. In order to run several OSs on a single hard drive you are to create a corresponding number of partitions to effectively delineate the boundaries of each OS.

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Scheduling

The automation of operations is particularly effective when you have to repeat a sequence of actions on a regular basis. For example, developing a specific project on a day-to-day basis and having to make a backup every evening so as not to lose the valuable data, you will really appreciate, when this kind of routine operations will be carried out automatically without your participation.

Another aspect of any automation process is that it allows an optimization of your computer's work-load. This is especially important when operations require a considerable amount of computer resources – processor time, memory and more. A number of tasks, which can decrease the performance, can be run during the night or whenever the computer has the least work-load to perform.

The program has a special tool for scheduling. You can set out a timetable for any operation and it will start at a specified time without interrupting your current activity.

Windows BitLocker

BitLocker is a security feature that enables to protect data of your volumes with 128/256-bit AES (Advanced Encryption Standard) encryption. It has first appeared in Windows Vista Enterprise and Vista Ultimate to protect contents of hard disks from offline attacks for instance, when your hard disk is stolen and connected to another computer to retrieve data it contains.

Our product enables to work with volumes encrypted by BitLocker, but only when they are unlocked. Until that locked volumes will be recognized in the program's interface as 'Not formatted'. You can unlock this type of volumes only through Windows-native facilities:

- Graphical user interface for Windows,
- **manage-bde** command line tool for Windows and the WinPE recovery media.

To know more on the subject, please consult the How to Work with Bitlocked Volumes chapter.

In the current version of our product the following operations are allowed to accomplish on volumes encrypted by BitLocker:

- Backup Partition;
- Restore Partition;
- Copy Partition;
- Delete Partition;
- Change Volume Label;
- Add/Remove Drive Letter;
- Hide/Unhide Partition;
- Mark Partition as Active/Inactive;
- Change Serial Number;
- Change Partition ID;
- Test Surface;
- Check File System Integrity;
- Properties.

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Windows Components

In the given section you can find all the information necessary to successfully work with the Windows version of the product.

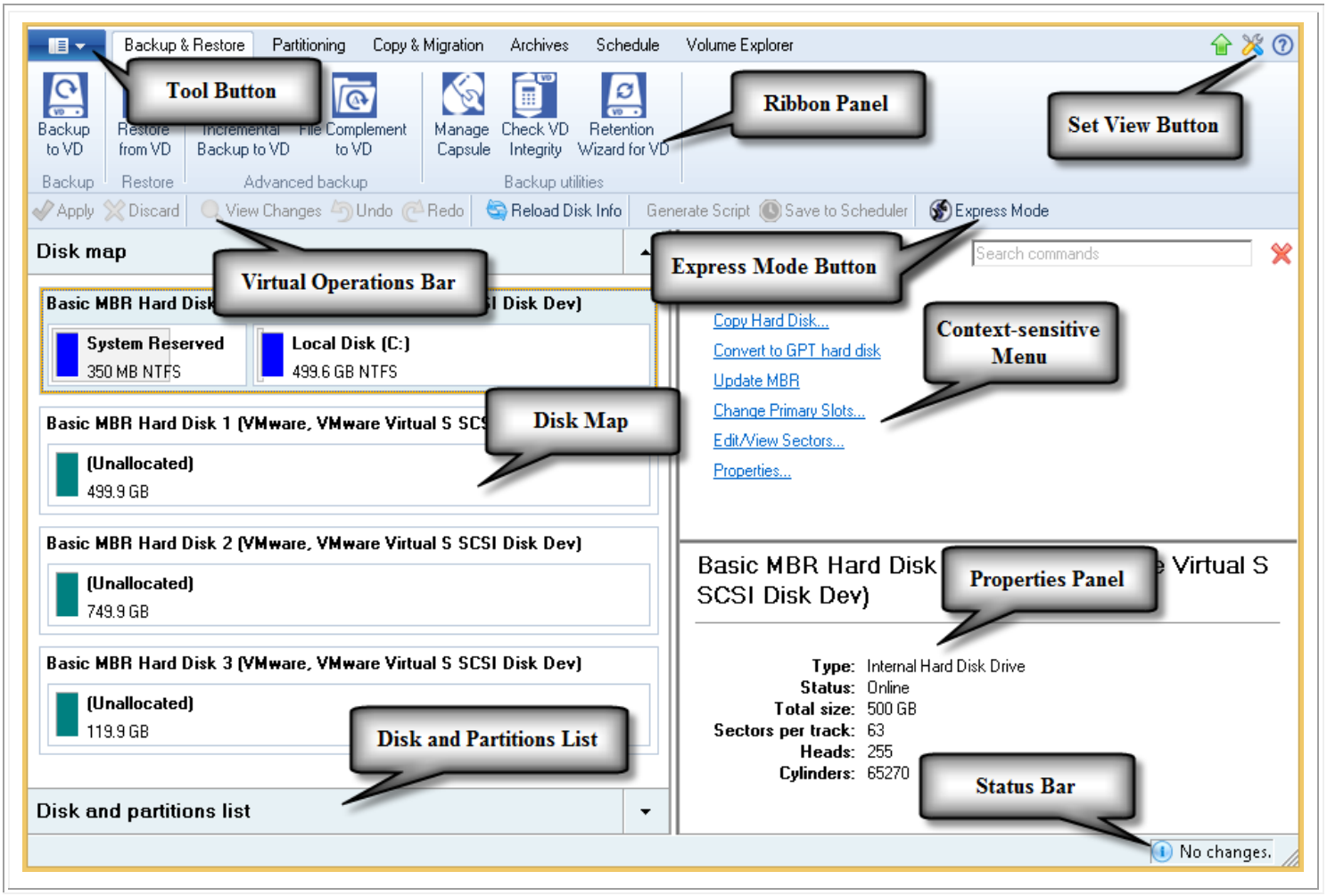
Interface Overview

This chapter introduces the graphical interface of the program. The design of the interface precludes any mistake being made on the part of the user. Most operations are performed through the system of wizards. Buttons and menus are accompanied by easy understandable icons. Nevertheless, any problems that might occur while managing the program can be tackled by reading this very chapter.

General Layout

When you start the program, the first component that is displayed is called the Launcher. It enables to run wizards and dialogs, to specify program settings, to visualize the operating environment and the hard disk configuration.

The Launcher's window can be conditionally subdivided into several sections that differ in their purpose and functionality:



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1. Tool Button
2. Ribbon Panel
3. Set View Button
4. Virtual Operations Bar
5. Express Mode Button
6. Disk Map
7. Disk and Partitions List
8. Context-sensitive Menu
9. Properties Panel
10. Status Bar

A number of panels offer similar functionality with a synchronized layout. The program enables to conceal some of them to simplify the interface management.

Tool Button

By clicking on this button the user can:

- Launch auxiliary wizards,
- Get access to the program settings,
- Collect and send a log files package to the Support Team,
- Go to Paragon's website to download a free update, register the product, visit Paragon's Knowledge Base, etc.

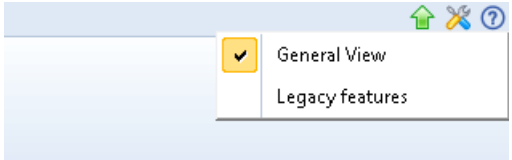
Ribbon Panel

An area across the top of the program's window is called the Ribbon Panel. It makes almost all the product capabilities available to the user in a single place. A Ribbon Tab is an area on the panel that contains buttons organized in groups by functionality. Each button corresponds to a certain program wizard or dialog.

If you'd like to hide all ribbon tabs, click on the arrow button at the right top corner of the program window.

Set View Button

You can adjust the working environment by choosing one of two predefined views: general and legacy. This division is quite logical, allowing the user to filter out legacy wizards and dialogs that have to do with the old PBF backup format. Please note that the legacy mode is not active by default.



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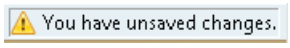
Virtual Operations Bar

The program supports previewing the resulting layout of hard disks before actually executing operations (so-called virtual mode of execution). In fact, when the virtual mode is enabled, the program does not accomplish operations immediately, but places them on the List of Pending Operations for later execution.

The Virtual Operations Bar enables to manage pending operations.

BUTTON	FUNCTIONALITY
	Cancel the last virtual operation on the List of Pending Operations
	Cancel the last undo virtual operation on the List of Pending Operations
	Display the List of Pending Operations
	Launch the real execution of virtual operations
	Cancel all virtual operations on the List of Pending Operations
	Generate a script out of all pending operations
	Schedule pending operations

Virtual mode is an effective way of protection from any troubles, since no operations will be executed until clicking the Apply button for confirmation, thus giving a second chance to weigh all pros and cons of this or that particular operation. The program politely reminds the user that there are unsaved changes by showing the following window:



Express Mode Button

By clicking on this button the user can switch to the express mode of operation at any time.

Disk Map

As the name infers, the Disk Map displays the layout of physical and logical disks. Physical disks are represented with rectangle bars that contain small-sized bars. These small-sized bars represent logical disks. Their color depends on the file system of the appropriate partition. By looking at the size of the bar's shaded area it is possible to estimate the used disk space. For the selected at the moment object there's the possibility to call a context-sensitive popup menu with available operations.

Large-sized bars display the following information about physical disks:

- Type (basic or dynamic MBR/GPT),
- Manufacturer,

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- Model.

Small-sized bars display the following information about logical disks and blocks of free space:

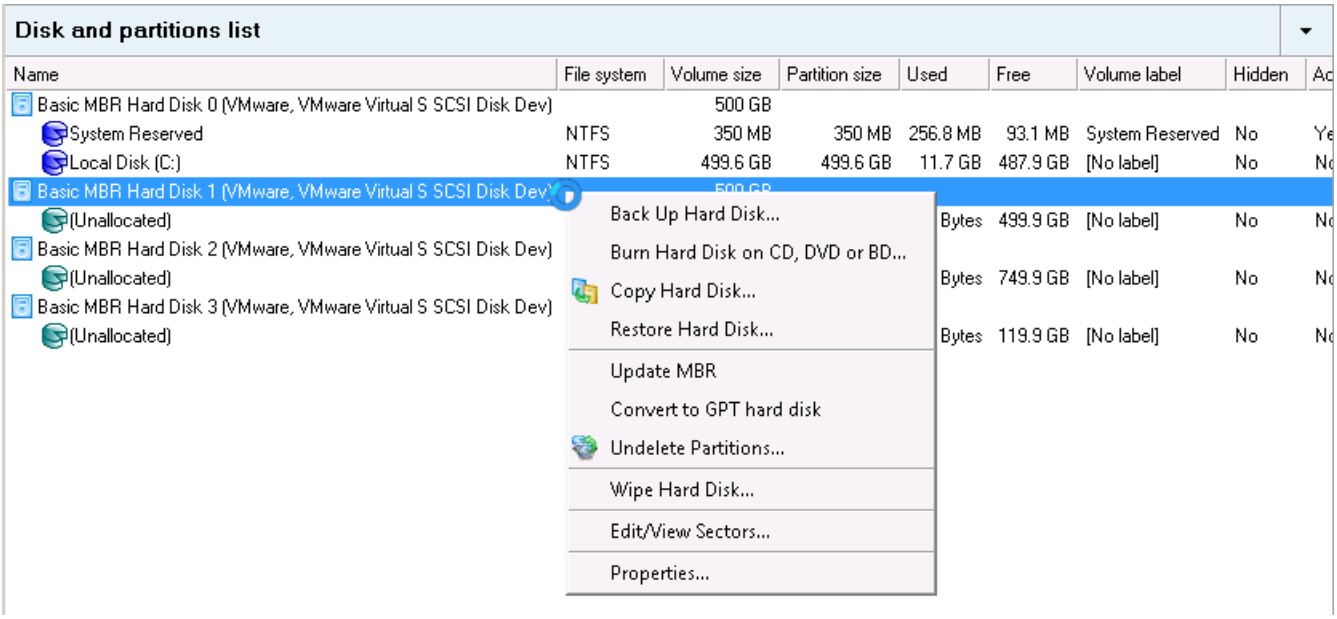
- Volume label (if exists),
- Drive letter,
- Total size,
- File system.

The Disk Map is synchronized with the Context-sensitive Menu and the Properties Panel. Thus by selecting a disk on the map, the two will automatically display detailed information on it. To know more on the subject, please consult the Viewing Disk Properties chapter.

Since the Disk Map and the Disk and Partitions List have the same purpose, the user is allowed to extend only one at the moment by using a corresponding arrow button.

Disk and Partitions List

The Disk and Partitions List is another helpful tool that helps to get a clear-cut picture on the current state of the system hard disks and partitions. All objects (disks, partitions, or blocks of free space) on the list are sorted according to their starting position. For every item there is the possibility to call a context-sensitive popup menu with available operations.



The Disk and Partitions List provides detailed information on all hard disks and partitions found in the system including the following properties:

- Name,
- Volume label (if exists),
- Drive letter,
- File system type,
- Volume size,
- Amount of used and unused (free) space,
- Active/Inactive attribute,

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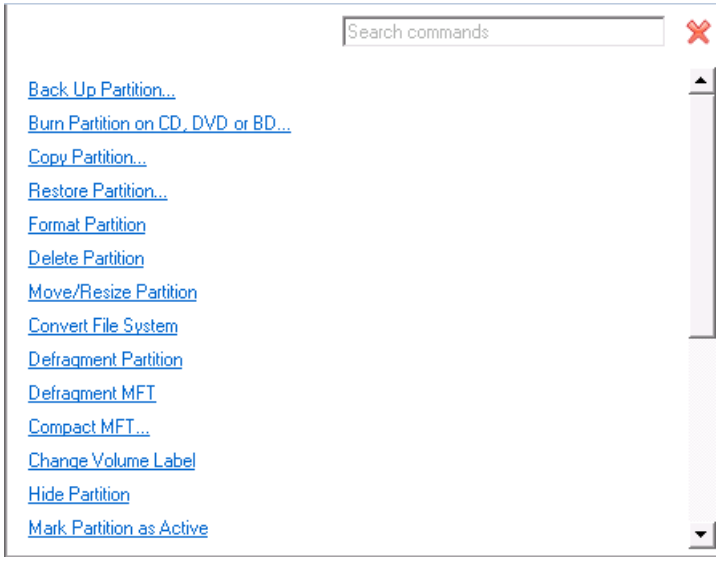
- Hidden/Unhidden attribute.

The Disk and Partitions List is synchronized with the Context-sensitive Menu and the Properties Panel. Thus by selecting a disk on the list, the two will automatically display detailed information on it. To know more on the subject, please consult the Viewing Disk Properties chapter.

Since the Disk Map and the Disk and Partitions List have the same purpose, the user is allowed to extend only one at the moment by using a corresponding arrow button.

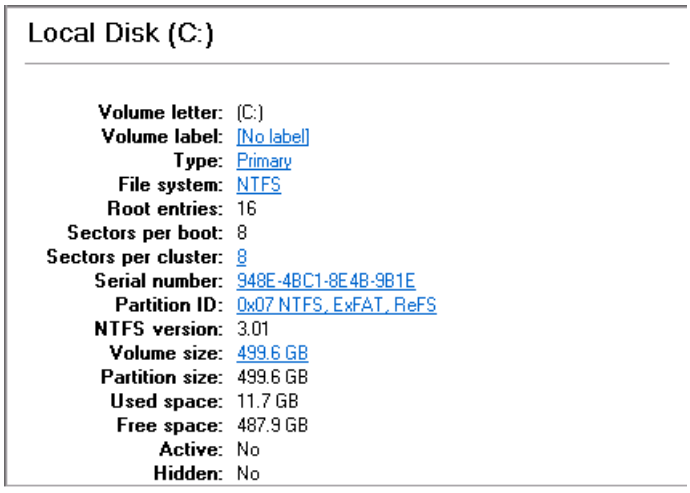
Context-sensitive Menu

The Context-sensitive Menu shows a list of operations available for an object (disk, partition, or block of free space) selected either on the Disk Map or the Disk and Partitions List. If you click a corresponding record the appropriate wizard or dialog will be started. All default values for the operation parameters will correspond to the object's settings. If there too many items on the list, type in the first word of the required command in the **Search commands** field to filter the list.



Properties Panel

The Properties Panel provides information on the object (disk, partition, or block of free space) selected either on the Disk Map or the Disk and Partitions List.



The Properties Panel helps to obtain the following data:

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For a hard disk

- Model,
- Serial number,
- Type of hard disk (basic or dynamic MBR/GPT),
- Total size (in GB),
- Information on geometry of the disk (amount of sectors per track, heads and cylinders).

For a partition

- Drive letter assigned to the disk,
- Volume label (if exists),
- Type of the logical disk,
- File system,
- Root entries,
- Serial number,
- NTFS version,
- Partition ID,
- Total size, used space and free space (in GB), etc.

Besides you can modify practically any partition property by clicking on the required value.

For a block of free space

- Total size (in GB).

Status Bar

This is the bottom part of the main window. The Status Bar displays menu hints, for each item the cursor points to.

Settings Overview

To call the Settings dialog, please click **Tool Button**, then select **Settings**. All the settings are grouped into several sections, which functions are described in the following paragraphs. The list of sections is placed on the left side of the dialog. By selecting a section from the list, you can open a set of options.

To get a detailed description to any setting, control, or field of the program just click the hint button and then the object you need.

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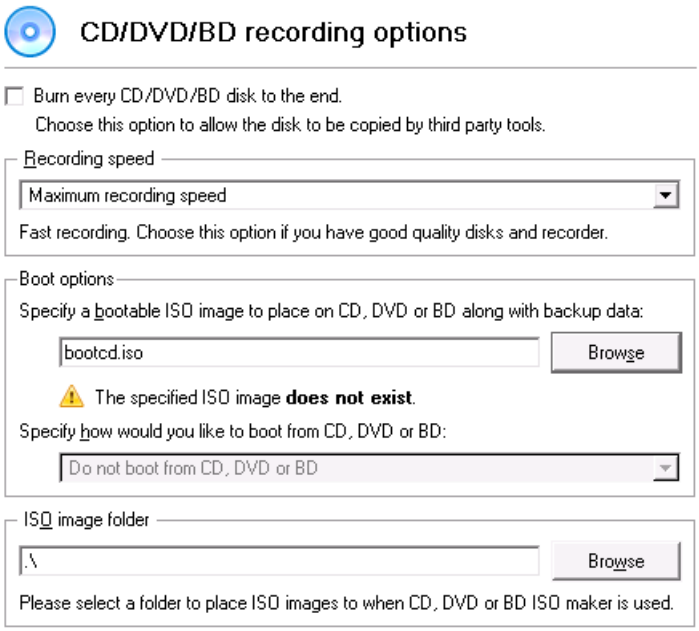
Application Section

CD/DVD/BD recording options


CD/DVD/BD recording options
Burn every CD/DVD/BD disk to the end.
Choose this option to allow the disk to be copied by third party tools.
Recording speed
Maximum recording speed
Fast recording. Choose this option if you have good quality disks and recorder.
Boot options
Specify a bootable ISO image to place on CD, DVD or BD along with backup data:
bootcd.iso
Browse
The specified ISO image does not exist.
Specify how would you like to boot from CD, DVD or BD:
Do not boot from CD, DVD or BD
ISO image folder
.\
Browse
Please select a folder to place ISO images to when CD, DVD or BD ISO maker is used.

This section contains a set of options that will be taken into account during CD/DVD/BD burn operations:

- **Burn every CD/DVD/BD to the end**. By default, the program does not create ISO 9660 compliant burning sessions, as it processes data on-the-fly and can only estimate the resulted session size. That's why no third party tool will get access to the recorded data. To tackle the issue, mark the checkbox to make the program create a standard Disk-at-Once session. It may slow down the burning process, as every CD/DVD/BD will be recorded up to the end, no matter how much actual information to contain.
- **Recording speed**. The user may define how fast a CD/DVD/BD will be recorded (minimum, normal and maximum). Besides there is an automatic mode when the program will set the most appropriate speed for every CD/DVD/BD.
- **Bootable ISO image**. That's the image to be placed together with the backup data. By default, the program offers its own bootable ISO image, which contains a Linux/DOS recovery environment. However, the user is free to use any bootable ISO image.
- **CD/DVD/BD boot capability**. The program enables to choose whether any recorded CD/DVD/BD will be bootable, or only the first one for a session, or without that function at all.
- **Folder where the ISO image is to be placed**. When the user decides not to physically burn a CD/DVD/BD, but create an ISO image file, this very folder will be used to contain these images.

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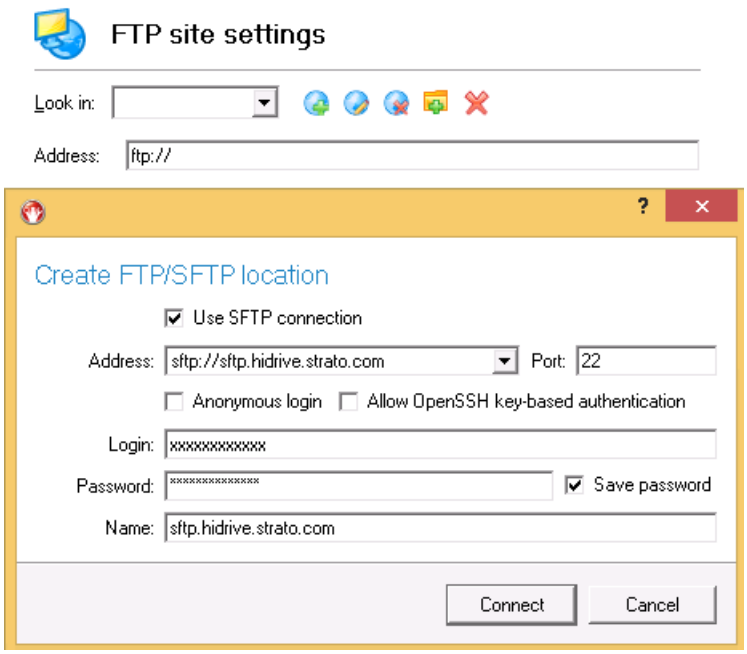
FTP sites options



In this section you can manage online backup storages located on FTP or SFTP servers. By clicking on available buttons, you can create, modify, delete an FTP/SFTP location, etc.

To create an FTP/SFTP location, you've got to specify a number of options:

- **Use SFTP connection**. Mark the option to connect to the desired SFTP server if necessary;
- **Address**. Type in an address to the desired server;
- **Port**. Specify the required port (21 for FPT and 22 for SFTP by default);
- **Anonymous login**. Mark the option to set up anonymous connection. Typical username for this type of login is "anonymous";
- **Use Active Mode** (only for FTP). Mark the option if your provider requires this type of authentication;
- **Allow Open SSH key-based authentication** (only for SFTP). If your provider requires this type of authentication, mark the option to specify public and private keys and a passphrase;

- **Login**. Enter a login;
- **Password**. Enter a password. Click **Remember password** to save it next time you back up to this location;
- **Name**. By default, the program uses the provided address as the connection name, which can be modified however.

You need to check out yourself Windows Firewall or programs of this kind let our program work with the required port (21 for FTP and 22 for SFTP by default).

By clicking the **Connect** button the provided location will be checked. If ok, you'll get a new item on the list named after this location. By clicking the + icon you can browse it to specify a more exact location for your backups.

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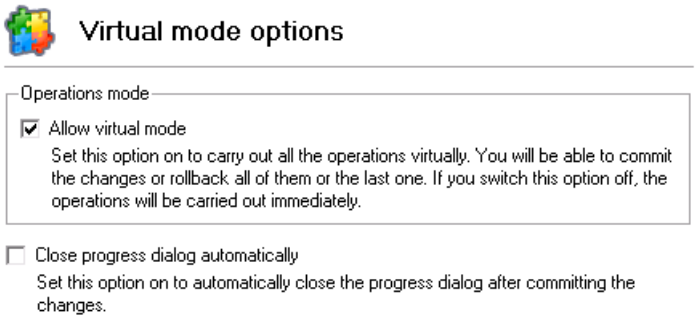
Virtual mode options


Virtual mode options
Operations mode
Allow virtual mode
Set this option on to carry out all the operations virtually. You will be able to commit the changes or rollback all of them or the last one. If you switch this option off, the operations will be carried out immediately.
Close progress dialog automatically
Set this option on to automatically close the progress dialog after committing the changes.

In this section you may configure the virtual mode:

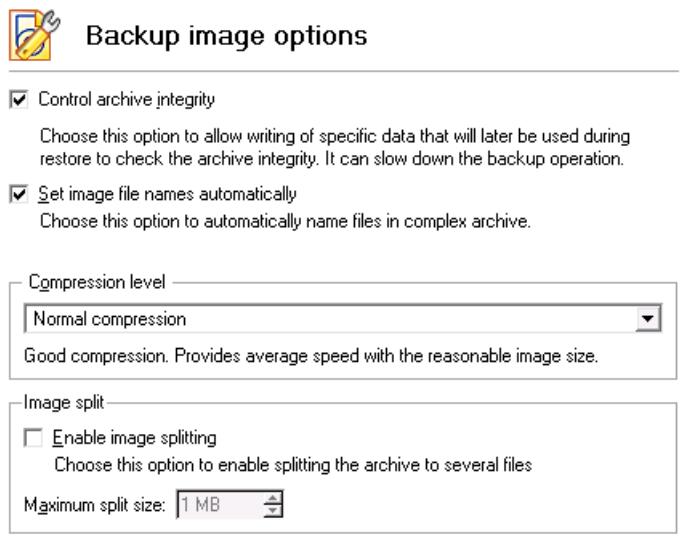
- **Allow virtual mode**. Mark the checkbox to enable the virtual mode. It is an effective way of protection from any troubles, since no operation will be executed until confirmation, thus giving you a second chance to weigh all pros and cons of this or that particular operation.

We strongly recommend you to enable this mode.

- **Close progress dialog automatically**. Mark the checkbox to automatically close the progress dialog after accomplishing operations.

Backup Section

Backup image options


Backup image options
Control archive integrity
Choose this option to allow writing of specific data that will later be used during restore to check the archive integrity. It can slow down the backup operation.
Set image file names automatically
Choose this option to automatically name files in complex archive.
Compression level
Normal compression
Good compression. Provides average speed with the reasonable image size.
Image split
Enable image splitting
Choose this option to enable splitting the archive to several files
Maximum split size:
1 MB

This section contains a set of options that will be taken into account during backup/restore operations:

- **Control archive integrity**. Mark the checkbox to guarantee that all backup images created with the program are 100 percent flawless. If you decided not to control the archive integrity, the backup operation would take about 3-5% less time.
- **Set image file names automatically**. Mark the checkbox to make the program automatically set a file name for every volume of a complex backup image. Otherwise you will need to do it manually during the backup operation.

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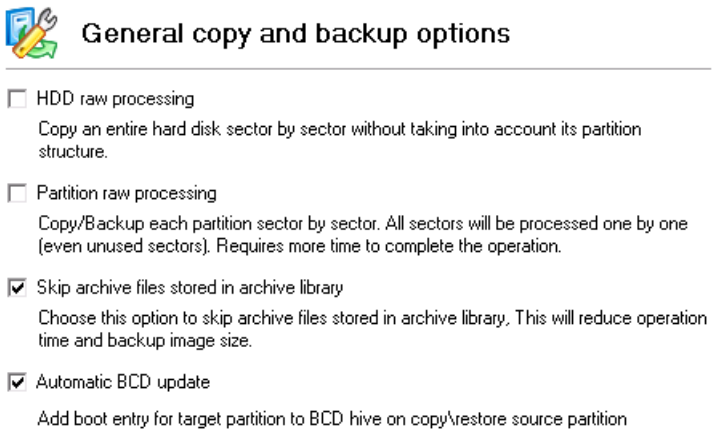
- **Compression level**. From the pull-down list you can select the desired compression level for backup images that will be used by default.
- **Enable image splitting**. Mark the checkbox to automatically split every backup image to volumes of a particular size.

Splitting images enables to tackle problems caused by a maximum file size limitation of some file systems.

- **Maximum split size**. With the spinner control you can specify a maximum size for backup volumes.

General copy and backup options


General copy and backup options
HDD raw processing
Copy an entire hard disk sector by sector without taking into account its partition structure.
Partition raw processing
Copy/Backup each partition sector by sector. All sectors will be processed one by one (even unused sectors). Requires more time to complete the operation.
Skip archive files stored in archive library
Choose this option to skip archive files stored in archive library. This will reduce operation time and backup image size.
Automatic BCD update
Add boot entry for target partition to BCD hive on copy\restore source partition

This section contains a set of options that will be taken into account during copy and backup operations:

- **HDD raw processing**. Mark the checkbox to copy/back up a hard disk in the sector-by-sector mode, thus ignoring its information structure (e.g. unallocated space or unused sectors of existing partitions will be processed as well). This can help to avoid problems with hidden data created by certain applications or the system administrator. However, it will take more time to accomplish the operation.
- **Partition raw processing**. Mark the checkbox to copy a partition in the sector-by-sector mode to successfully process unknown file systems. However it is not recommended to enable this option when working with supported file systems as it takes more time to accomplish the operation.
- **Skip OS auxiliary files**. Mark the checkbox to skip OS auxiliary files (like pagefile.sys, hiberfil.sys, etc.), thus reducing the operation time and the resulted size of the backup image.
- **Skip archive files stored in archive library**. Mark the checkbox to skip backup images registered in the archive database, thus reducing the operation time and the resulted size of the backup image.
- **Automatic BCD Update**. Unmark the checkbox to suppress automatic update of BCD (Boot Configuration Data) after copy/restore operations.

By clicking the link at the bottom of the window you can jump to the Copy/Backup exclude options.

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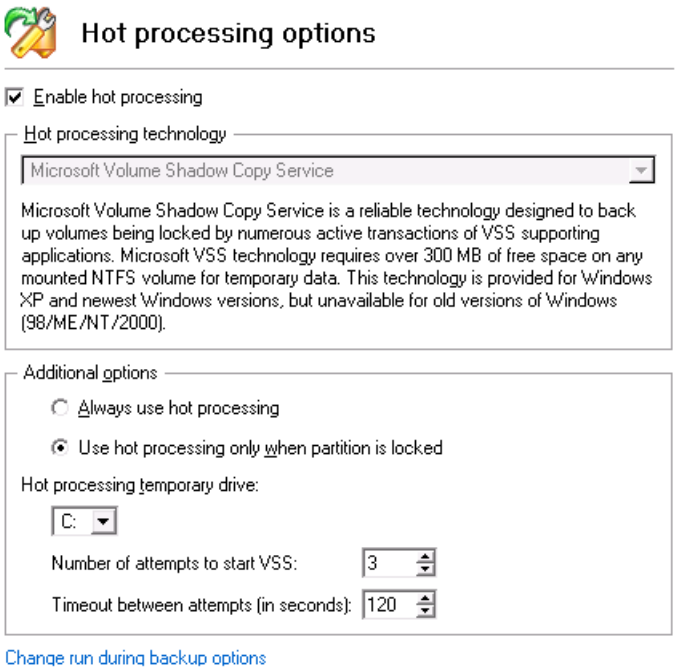
Hot processing options


Hot processing options
Enable hot processing
Hot processing technology
Microsoft Volume Shadow Copy Service
Microsoft Volume Shadow Copy Service is a reliable technology designed to back up volumes being locked by numerous active transactions of VSS supporting applications. Microsoft VSS technology requires over 300 MB of free space on any mounted NTFS volume for temporary data. This technology is provided for Windows XP and newest Windows versions, but unavailable for old versions of Windows (98/ME/NT/2000).
Additional options
Always use hot processing
Use hot processing only when partition is locked
Hot processing temporary drive:
C:
Number of attempts to start VSS:
3
Timeout between attempts (in seconds):
120
Change run during backup options

In this section you may configure the hot processing mode:

- **Enable hot processing**. Mark the checkbox to enable the so called hot data processing mode that is specially designed to process data without restarting your operating system.
- **Hot processing technology**. From the pull-down list you can select the required hot processing technology.
- **Always use hot processing**. Select the option to process partitions without making them locked. Thus you will be able to keep working with them as usual.
- **Use hot processing only when partition is locked**. Select the option to use the hot processing only when partitions are locked and cannot be processed without restarting the computer. Please keep in mind, that once you start any operation on a partition in this mode, it will automatically be locked by the program, thus you won't be able to keep working with it as usual.
- **Hot processing temporary drive**. Here you can select a disk drive that will be used to store the temporary hot backup data (by default – C:).
- **Attempts to start VSS**. Here you can set how many attempts to start Microsoft VSS the program is to do before automatically rebooting the system and accomplishing the operation in a special boot-up mode.
- **Timeout between attempts (in seconds)**. Here you can set a time period between different attempts to start Microsoft VSS.
- **Switch between hot processing technologies**. Mark the checkbox to automatically switch between Paragon Hot Processing and Microsoft VSS if one of them is unavailable at the moment.

By clicking the link at the bottom of the window you can jump to the Run during backup options.

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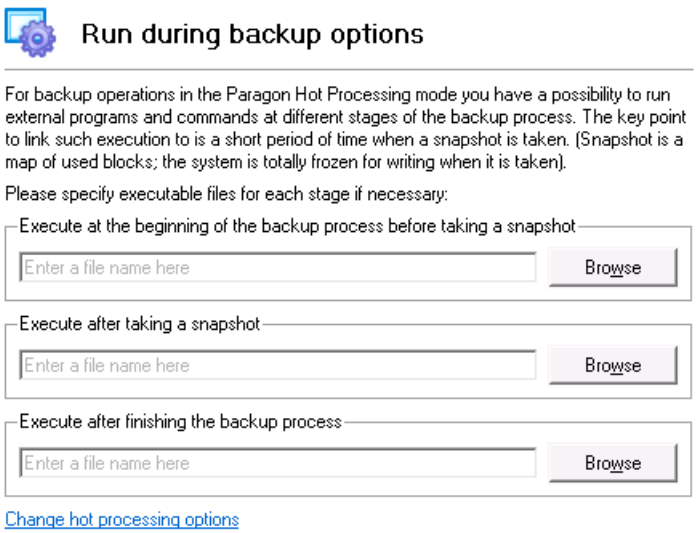
Run during backup options


Run during backup options
For backup operations in the Paragon Hot Processing mode you have a possibility to run external programs and commands at different stages of the backup process. The key point to link such execution to is a short period of time when a snapshot is taken. (Snapshot is a map of used blocks; the system is totally frozen for writing when it is taken).
Please specify executable files for each stage if necessary:
Execute at the beginning of the backup process before taking a snapshot
Enter a file name here
Browse
Execute after taking a snapshot
Enter a file name here
Browse
Execute after finishing the backup process
Enter a file name here
Browse
Change hot processing options

In this section you can specify external applications to execute at various phases of the backup process. It can be particularly useful when imaging systems with high availability requirements (MS SQL, MS Exchange, etc.), since it enables to create a consistent snapshot even as the data is currently modified. The point is to provide a coherent state of all open files and databases involved in a backup, taking into account that applications may still keep writing to disks.

Actually the backup process consists of two phases: the preparation phase (snapshot) and the data-copying phase. There are three points of the backup when external commands/programs can be launched:

- **Execute at the beginning of the backup process before taking a snapshot**. Here you can specify an executable file that will help you to prepare running applications for taking a snapshot. It may contain specific commands/programs to delete unnecessary files, suspend services, flush transactions or caches, etc. Everything depends on the used applications.

- **Execute after taking a snapshot**. Here you can specify an executable file that will run just after taking a snapshot. It may contain specific commands/programs, e.g. to resume the previously suspended services, etc. Everything depends on the used applications.

- **Execute after finishing the backup process**. Here you can specify an executable file that will run after the backup process has been accomplished. It may include commands/ programs that will move the backup image to a particular location, etc.

By clicking the link at the bottom of the window you can jump to the Hot processing options.

By clicking the Browse button you can get into the browser-like window to choose an executable file.

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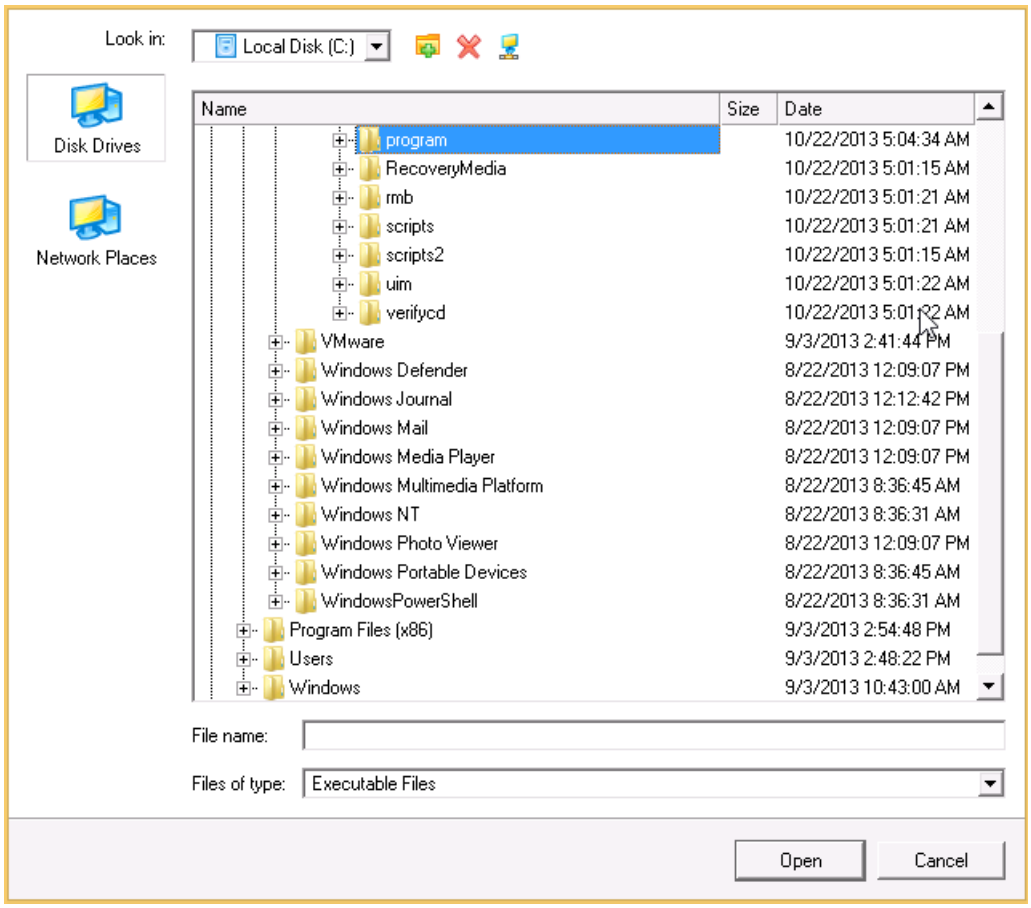

The program provides the ability to work with three types of executable files (.exe, .bat, .cmd). It is up to the user to write batch files to safely prepare applications for backup. There are some certain general requirements for that:

- All programs and commands must execute sequentially and finish before the .bat file completes its work.
- It is recommended to use external commands/programs in the following format - **Start/wait program.exe**. The **wait** option will help to start an application and wait until it completes its work. This will guarantee that all included commands/programs complete their execution before the batch file does.

This function is only available when the Hot Processing mode is enabled.

The program enables to set parameters for an executable file directly from the line. However, if the file path contains word gaps it is necessary to enclose it in quotes in order to make the program distinguish between the path and the used parameters.

By clicking the link at the bottom of the window you can jump to the Hot processing options.

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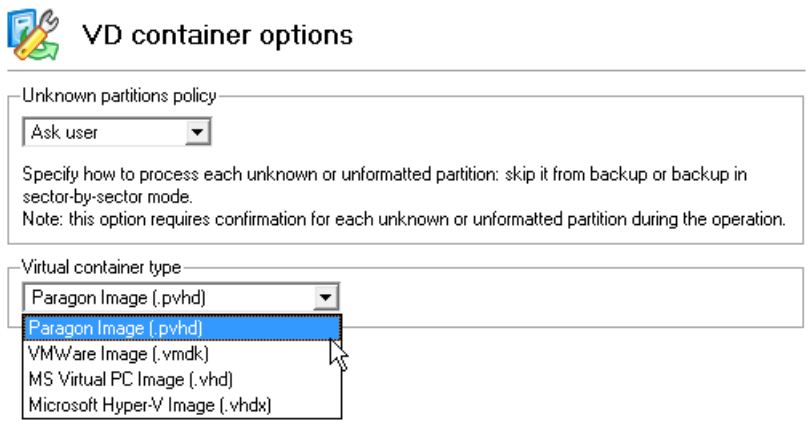
VD container options

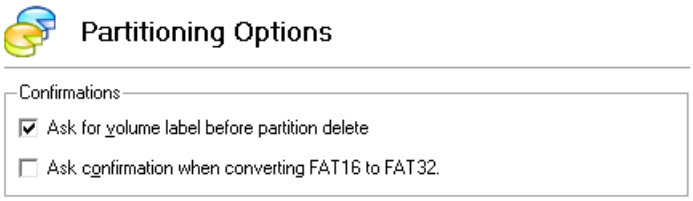

VD container options
Unknown partitions policy
Ask user
Specify how to process each unknown or unformatted partition: skip it from backup or backup in sector-by-sector mode.
Note: this option requires confirmation for each unknown or unformatted partition during the operation.
Virtual container type
Paragon Image (.pvhd)
Paragon Image (.pvhd)
VMWare Image (.vmdk)
MS Virtual PC Image (.vhd)
Microsoft Hyper-V Image (.vhdx)

This section contains options that will be taken into account when creating virtual containers:

- **Unknown partitions policy**. Here you can define behavior for processing unknown or unformatted partitions (skip from backup, process in the sector-by-sector mode, or ask the user each time this type of partition has been found).
- **Virtual container type**. By default the program is configured to back up to pVHD (Paragon Virtual Hard Drive). Use this option to switch the resulted virtual container to VHD, VHDX, or VMDK. Please note that the use of pVHD enables to get full backup images several times smaller than the original objects, while incremental updates – dozens of times smaller when comparing to VHD, VHDX or VMDK, which have some fixed size of blocks, not dynamic. Besides encryption and password protection are only available for pVHD. However, if you're having a VMware or Microsoft hypervisor at your disposal and are planning to do instant virtualization, please make sure the used backup format matches your hypervisor.

Partitioning Section

Partitioning options


Partitioning Options
Confirmations
Ask for volume label before partition delete
Ask confirmation when converting FAT16 to FAT32.

This section contains a set of options that will be taken into account during partitioning operations:

- **Request confirmation before partition deletion**. Mark the checkbox to activate an additional security mechanism. Thus when going to delete a partition you will be automatically requested to enter its label.
- **Request confirmation when converting FAT16 to FAT32**. Mark the checkbox to automatically request confirmation before converting FAT16 to FAT32. There are a number of situations when this kind of conversion is the only way out to accomplish the operation. For instance, you are going to migrate your system to a larger hard disk with the proportional resize of existing partitions, what is very convenient. As a result you can get original FAT16 partitions go beyond the 4GB limit. Thus without conversion to FAT32, this operation will in no way be possible to accomplish. The same goes for any copy hard disk/partition or restore hard disk/partition operation involving an extra upsizing.

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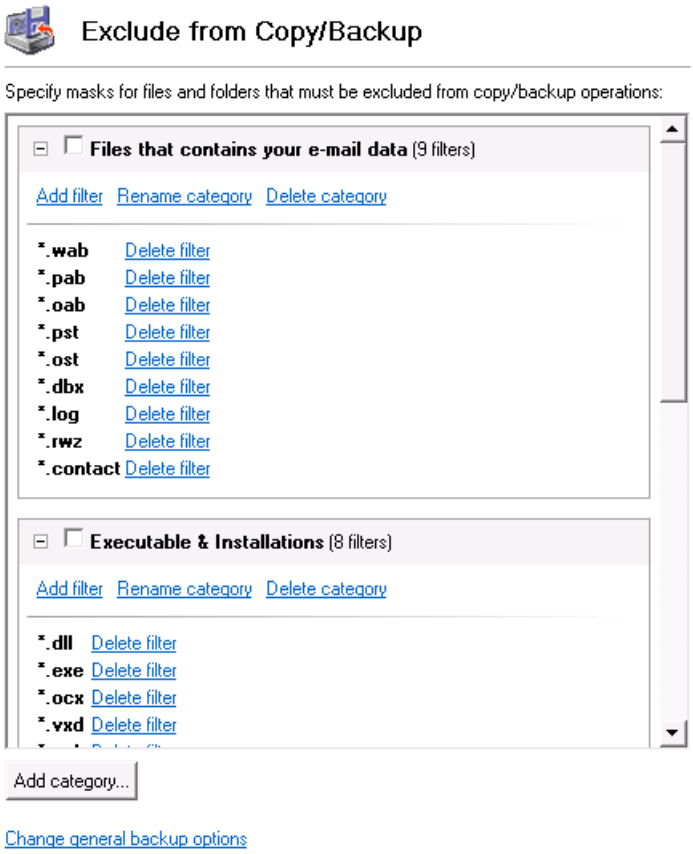
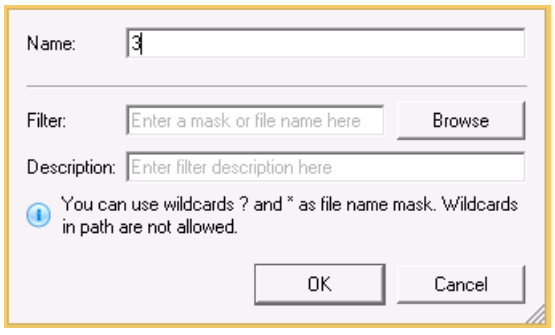
Include/Exclude Section

Copy/Backup exclude options


Exclude from Copy/Backup
Specify masks for files and folders that must be excluded from copy/backup operations:
Files that contains your e-mail data (9 filters)
Add filter Rename category Delete category
*.wab Delete filter
*.pab Delete filter
*.oab Delete filter
*.pst Delete filter
*.ost Delete filter
*.dbx Delete filter
*.log Delete filter
*.rwz Delete filter
*.contact Delete filter
Executable & Installations (8 filters)
Add filter Rename category Delete category
*.dll Delete filter
*.exe Delete filter
*.ocx Delete filter
*.vxd Delete filter
Add category...
Change general backup options

In this section the program enables to specify what data should be automatically ignored during copy and sector-based backup operations. You can filter certain files or folders either by the manual selection or by creating masks, what is more preferable. Thus you will be able to effectively manage contents of your backup images or partition/hard disk copies.

By default, there are no available filters. To create a filter, please click the Add Category… button.


Name: 3
Filter: Enter a mask or file name here Browse
Description: Enter filter description here
You can use wildcards ? and * as file name mask. Wildcards in path are not allowed.
OK Cancel

In the opened dialog the program allows the user to define the following parameters:

- **Name**. Give to the filter any name you like, but try to use an informative one;
- **Filter**. Press the Browse button to select files or folders you would like to be excluded or specify a filter mask by using * or ? wildcards;
- **Description**. Add a short description to the filter not to miss it up later.

Click the OK button and you will get a new item on the list of filters. By marking/unmarking a checkbox opposite its name you can choose whether to use it or not.

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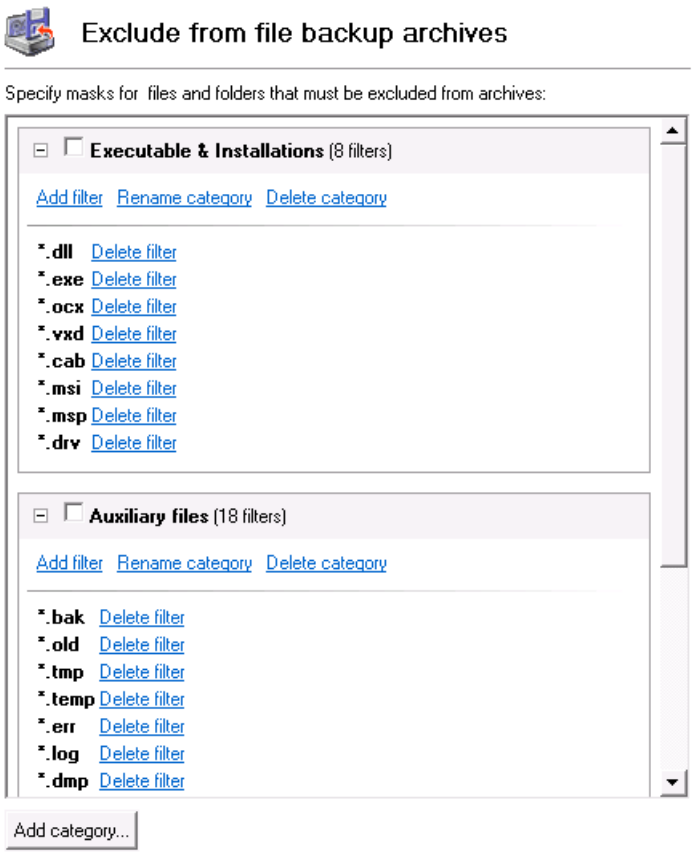
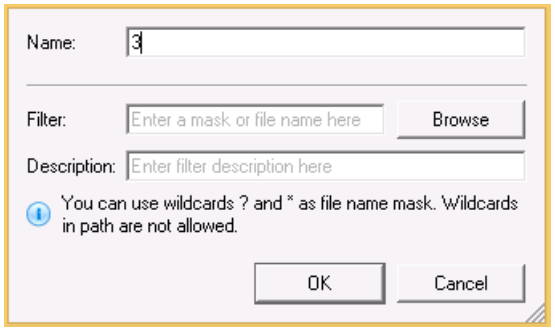
By clicking the link at the bottom of the window you can jump to the General copy and backup options.

File backup exclude options



In this section you can find a lot of ready-made exclude filters to effectively control contents of your file-based backup images. Please note, by selecting certain filters you specify what data will be ignored during file-based backup operations, thus you specify the data you'd like not to be added to the resulted archives.

Anyway you've got the option to create your own filter by clicking the Add category… button.



In the opened dialog the program allows the user to define the following parameters:

- **Name**. Give to the filter any name you like, but try to use an informative one;
- **Filter**. Press the Browse button to select files or folders you would like to be excluded or specify a filter mask by using * or ? wildcards;
- **Description**. Add a short description to the filter not to miss it up later.

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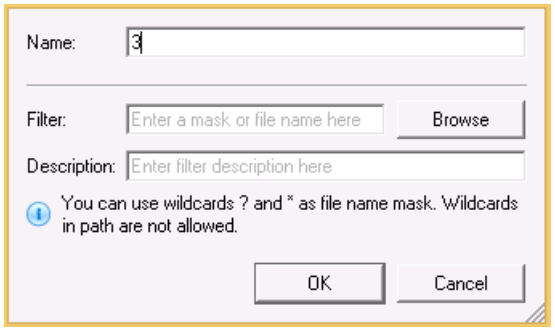
Click the OK button and you will get a new item on the list of filters. By marking/unmarking a checkbox opposite its name you can choose whether to use it or not.

File backup include options

In this section you can find a lot of ready-made include filters to effectively control contents of your file-based backup images. Please note, by selecting certain filters you specify what data will be processed during file-based backup operations, thus you automatically ignore files that do not match, so they won't be added to the resulted archives.

Anyway you've got the option to create your own filter by clicking the Add category… button.



In the opened dialog the program allows the user to define the following parameters:

- **Name**. Give to the filter any name you like, but try to use an informative one;
- **Filter**. Press the Browse button to select files or folders you would like to be excluded or specify a filter mask by using * or ? wildcards;
- **Description**. Add a short description to the filter not to miss it up later.

Click the OK button and you will get a new item on the list of filters. By marking/unmarking a checkbox opposite its name you can choose whether to use it or not.

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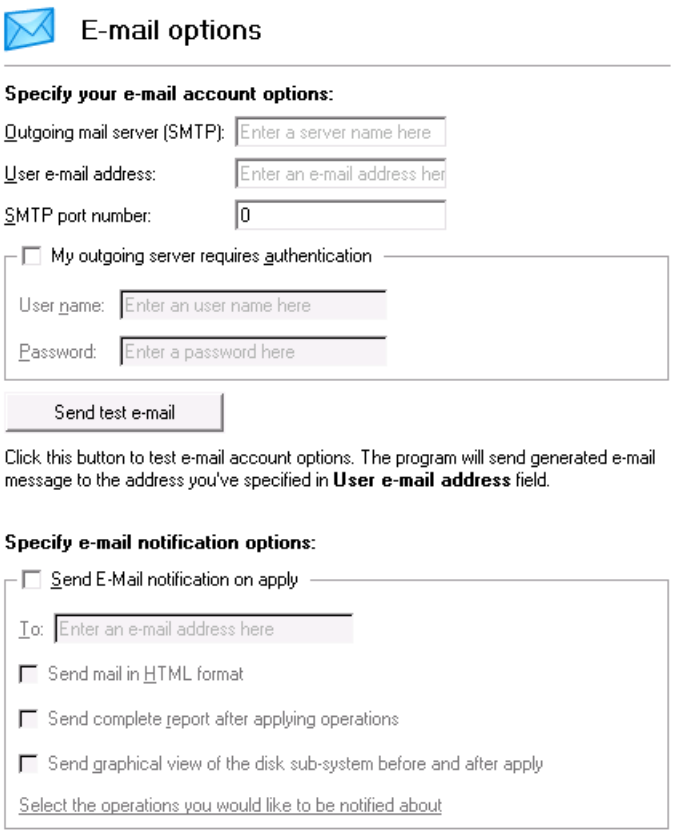
E-mail Notifications and Logging Section

E-Mail options


E-mail options
Specify your e-mail account options:
Outgoing mail server (SMTP):
Enter a server name here
User e-mail address:
Enter an e-mail address her
SMTP port number:
0
My outgoing server requires authentication
User name:
Enter an user name here
Password:
Enter a password here
Send test e-mail
Click this button to test e-mail account options. The program will send generated e-mail message to the address you've specified in User e-mail address field.
Specify e-mail notification options:
Send E-Mail notification on apply
To:
Enter an e-mail address here
Send mail in HTML format
Send complete report after applying operations
Send graphical view of the disk sub-system before and after apply
Select the operations you would like to be notified about

This section contains a set of options that will be taken into account during the Send log files and Send e-mail notification operations:

- **Outgoing mail server (SMTP)**. To send messages by using the built-in mail client, it is necessary to have access to a computer running an SMTP (Simple Mail Transfer Protocol) server. All outgoing messages are first sent to the SMTP server, which in its turn delivers them to the required recipients. The address may be represented as a traditional Internet host name (e.g.: mail.com) or as an IP numeric address (e.g. xxx.xxx.xxx.xx).
- **User e-mail address**. Specify an e-mail address that has been assigned by the Internet Service Provider or organization's e-mail administrator.
- **My outgoing server requires authentication**. Activate the option to allow the program to make authentication on the server before sending messages.

  - User name. Enter the name that will be used to log in to the e-mail account.

  - Password. Enter the password that will be used to access the mail server.

When you're ready with the settings, click on the **Send test e-mail** button to check if everything is OK.

- **Send e-mail notification on apply**. Specify an e-mail to send notifications on the carried out operations.

  - **Send mail in HTML format**. Activate the option to create messages in the HTML format instead of plain text.

  - **Send complete report after applying operations**. Activate the option to create an in-depth report on the carried out operations and send it after performing the last operation.

  - **Send graphical view of the disk sub-system before and after apply**. Activate the option to allow the program to attach two pictures of the disk layout made before and after the operation is completed.

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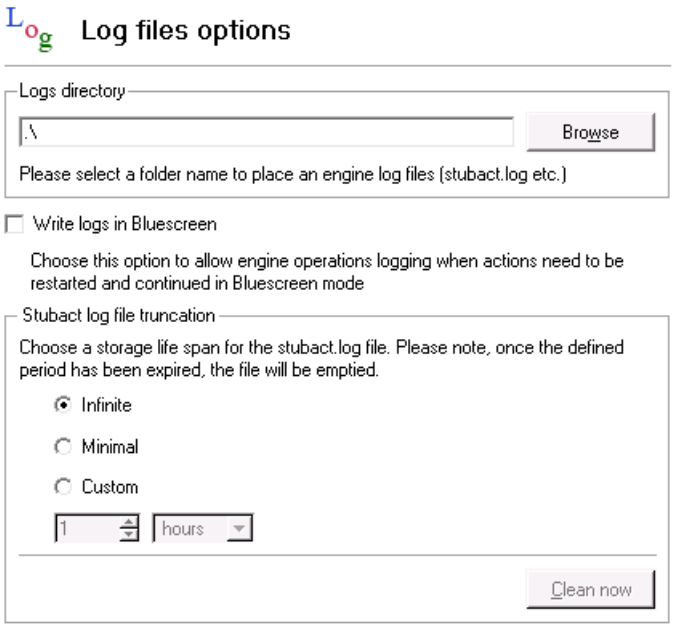
By clicking the link at the bottom of the window you can jump to the Operation dependency options.

Log files options


Log files options
Logs directory
.\
Browse
Please select a folder name to place an engine log files (stubact.log etc.)
Write logs in Bluescreen
Choose this option to allow engine operations logging when actions need to be restarted and continued in Bluescreen mode
Stubact log file truncation
Choose a storage life span for the stubact.log file. Please note, once the defined period has been expired, the file will be emptied.
Infinite
Minimal
Custom
1
hours
Clean now

In this section you can set up the program logging engine:

- **Logs directory** to specify location of program log files. By default, all logs are placed to: **C:\Program Files\Paragon Software\product's name\program**
- **Write logs in Bluescreen** to enable the program logging in a special boot-up mode
- **Stubact log file truncation** to specify a storage life span for the stubact.log file:
  - **Infinite** not to empty the file ever;
  - **Minimal** to have the file emptied all the time;
  - **Custom** to set a certain storage life span for the file. Please note, once the defined period has been expired, the file will be emptied.

We strongly recommend you not to choose the Minimal option, as in case of having problems with the program, our Support Team won't be able to study operation logs, thus help you out.

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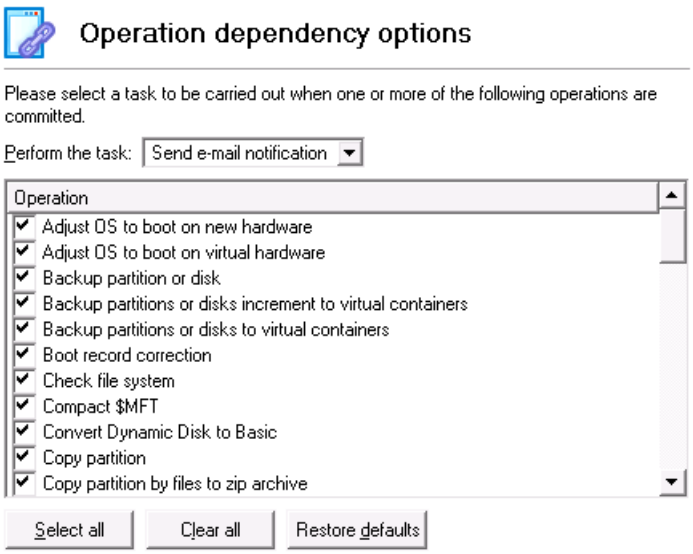
Operation dependency options


Operation dependency options
Please select a task to be carried out when one or more of the following operations are committed.
Perform the task: Send e-mail notification
Operation
Adjust OS to boot on new hardware
Adjust OS to boot on virtual hardware
Backup partition or disk
Backup partitions or disks increment to virtual containers
Backup partitions or disks to virtual containers
Boot record correction
Check file system
Compact $MFT
Convert Dynamic Disk to Basic
Copy partition
Copy partition by files to zip archive
Select all
Clear all
Restore defaults

This section contains a set of options that will be taken into account when the Send e-mail notification on apply function is enabled. By marking/unmarking a checkbox opposite the required operation you can choose whether to receive an e-mail notification on its completion or not.

You won't be notified if an operation requires the system restart.

Viewing Disk Properties

The Disk Map and the Disk and Partitions List are the main tools to get information on the properties of hard disks and partitions available in the system. To know more on the subject, please consult the corresponding chapters of the Interface Overview chapter.

Viewing Image Properties

General information on backup archives can be obtained with the following tools:

Using the Restore Wizard

- Click the **Backup & Restore** tab on the Ribbon Panel, then select **Restore**.

There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.

At first, the wizard displays the Welcome page – simply click the Next button at the foot of the dialog window.

The next page refers to Browse for Archive. By clicking the **Switch to Archive List View** link, you can see a list of images contained in the Archive Database (if any).

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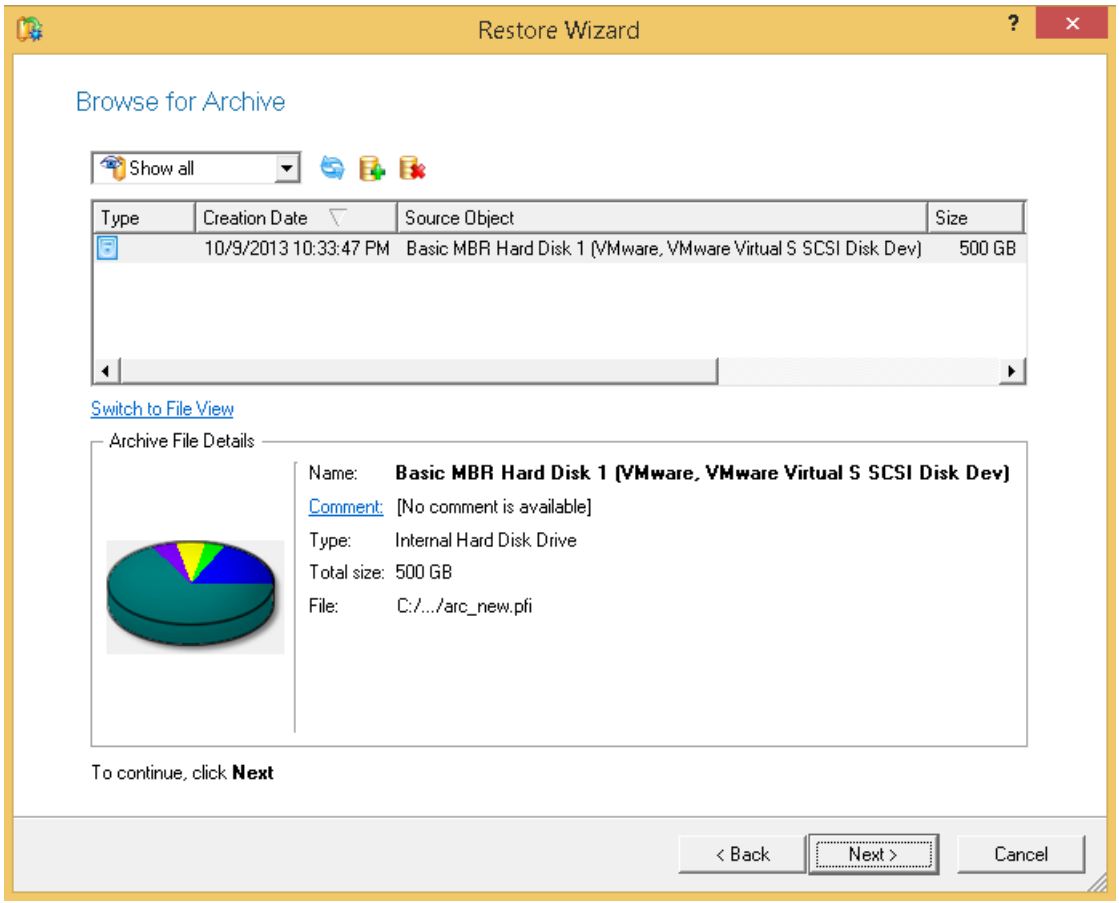

To get a clear-cut picture on properties of the required image, just click on it and the section below will (i.e. Archive File Details) display a short description, including:

- Information on a type of the archive contents (whether it is sector-based or file-based),
- Whether the archive is compressed or not,
- Whether the archive is password protected or not,
- The date, when the archive was created.

In addition, there are some special graphical flags to indicate crucial properties:

FLAG	FUNCTIONALITY
	Disk archive
	Partition archive
	File archive
	MBR archive
	System archive
	Encrypted archive
	Compressed archive
	Complex archive

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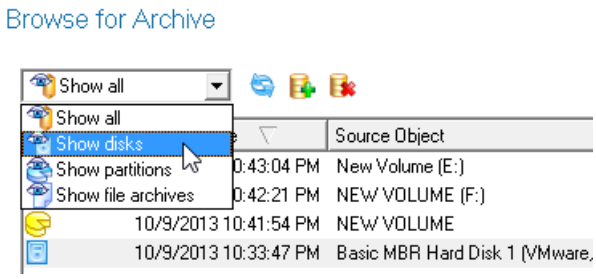
	Filtered archive
	Differential archive
	Incremental archive
	File increment to a partition archive

To easily manage images in the Archive Database, the program provides the following functionality:

BUTTON	FUNCTIONALITY
	Refresh the contents of the database
	Show only existing archives
	Add the selected archive to the database
	Delete the selected archive from the database

Besides you may filter backup archives to decide whether to show only file, partition or hard disk archives. To do that, please select the required filter in the left top corner of the page.



By clicking the **Switch to File View** link, you can find the required image in the browser-like window.

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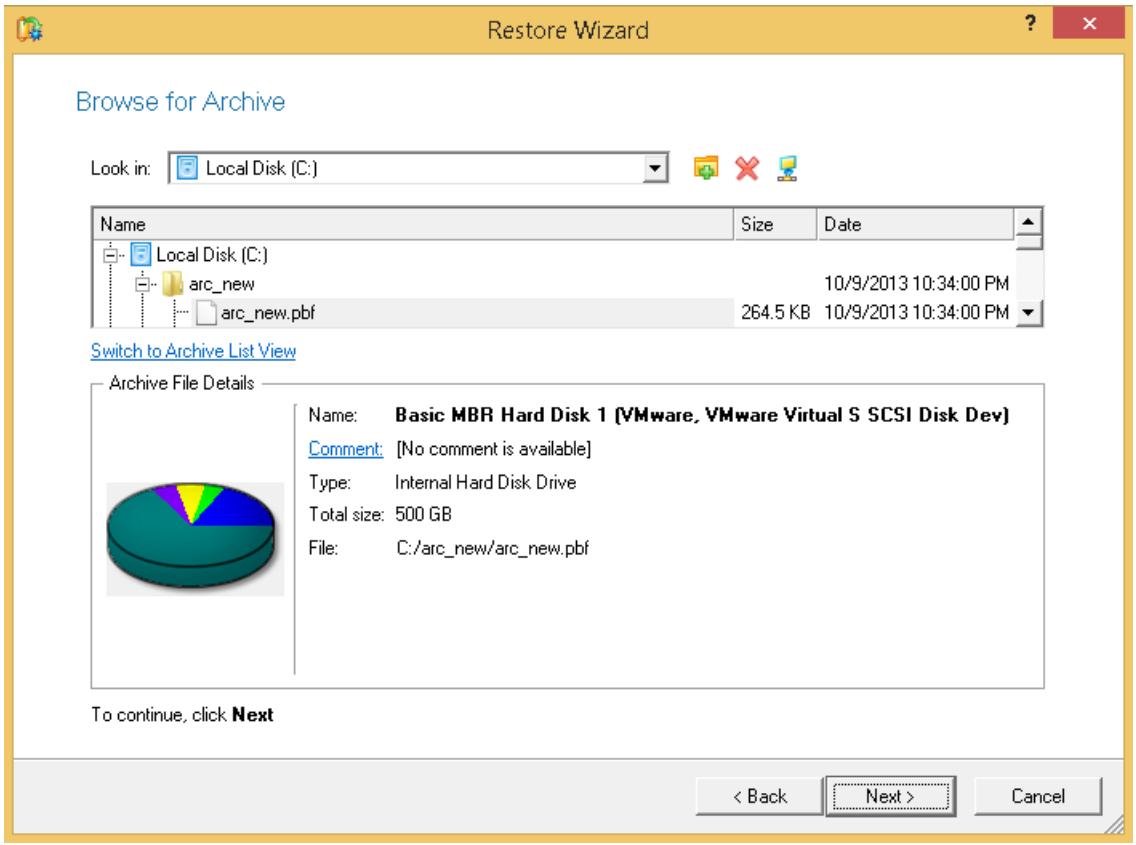

The section below (i.e. Archive File Details) displays a short description of the selected image, including:

- Information on a type of the archive contents (whether it is sector-based or file-based),
- Whether the archive is compressed or not,
- Whether the archive is password protected or not,
- The date, when the archive was created.

Moreover, on this page you've got the possibility to create new folders, delete existing files/folders or map network drives by clicking the appropriate buttons.

The next page (i.e. What to restore) displays detailed information about the contents of the archive.

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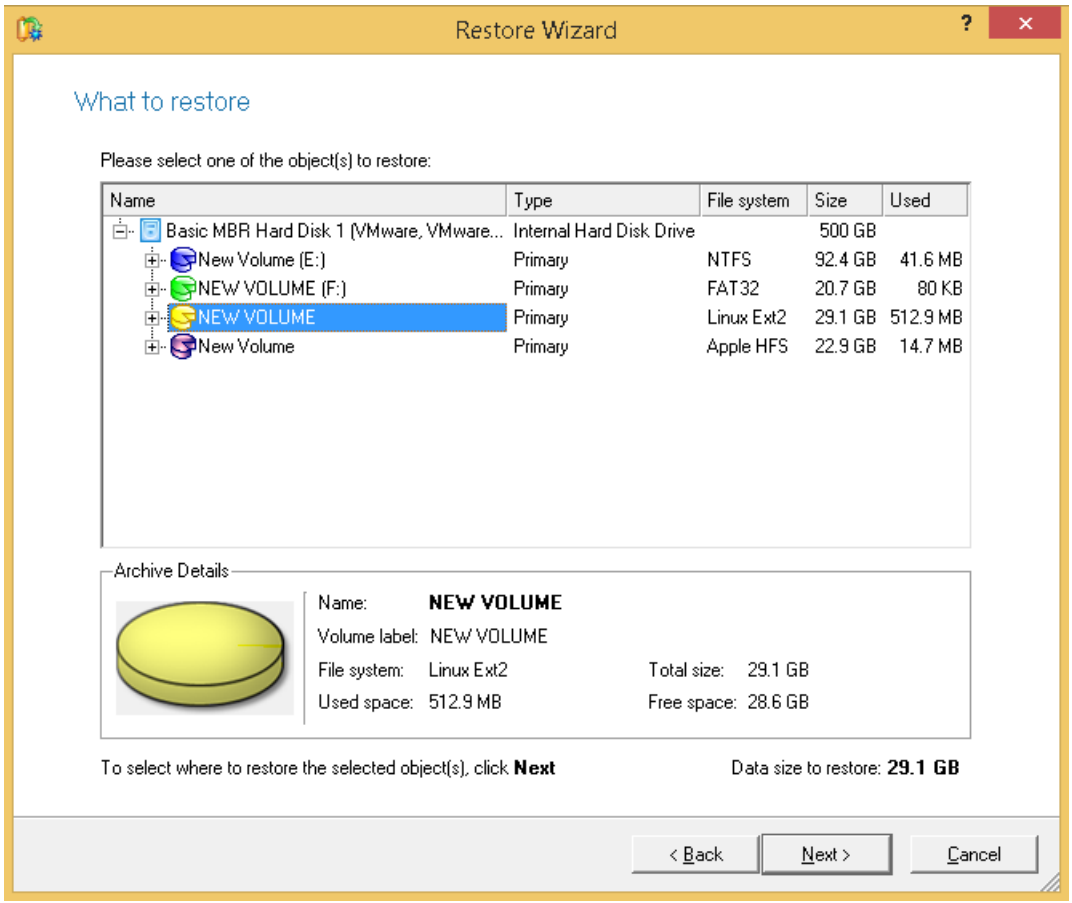
Restore Wizard
What to restore
Please select one of the object(s) to restore:
Name
Type
File system
Size
Used
Basic MBR Hard Disk 1 (VMware, VMware... Internal Hard Disk Drive 500 GB
New Volume (E:) Primary NTFS 92.4 GB 41.6 MB
NEW VOLUME (F:) Primary FAT32 20.7 GB 80 KB
NEW VOLUME Primary Linux Ext2 29.1 GB 512.9 MB
New Volume Primary Apple HFS 22.9 GB 14.7 MB
Archive Details
Name: NEW VOLUME
Volume label: NEW VOLUME
File system: Linux Ext2
Total size: 29.1 GB
Used space: 512.9 MB
Free space: 28.6 GB
To select where to restore the selected object(s), click Next
Data size to restore: 29.1 GB
< Back
Next >
Cancel

If you want to restore the image contents, click the Next button. In order to cancel, click the Cancel button.

Using the Archive Database

To open the Archive Database, click the **Archives** tab on the Ribbon Panel. The database window can be conditionally subdivided into several sections that differ in their purpose and functionality:

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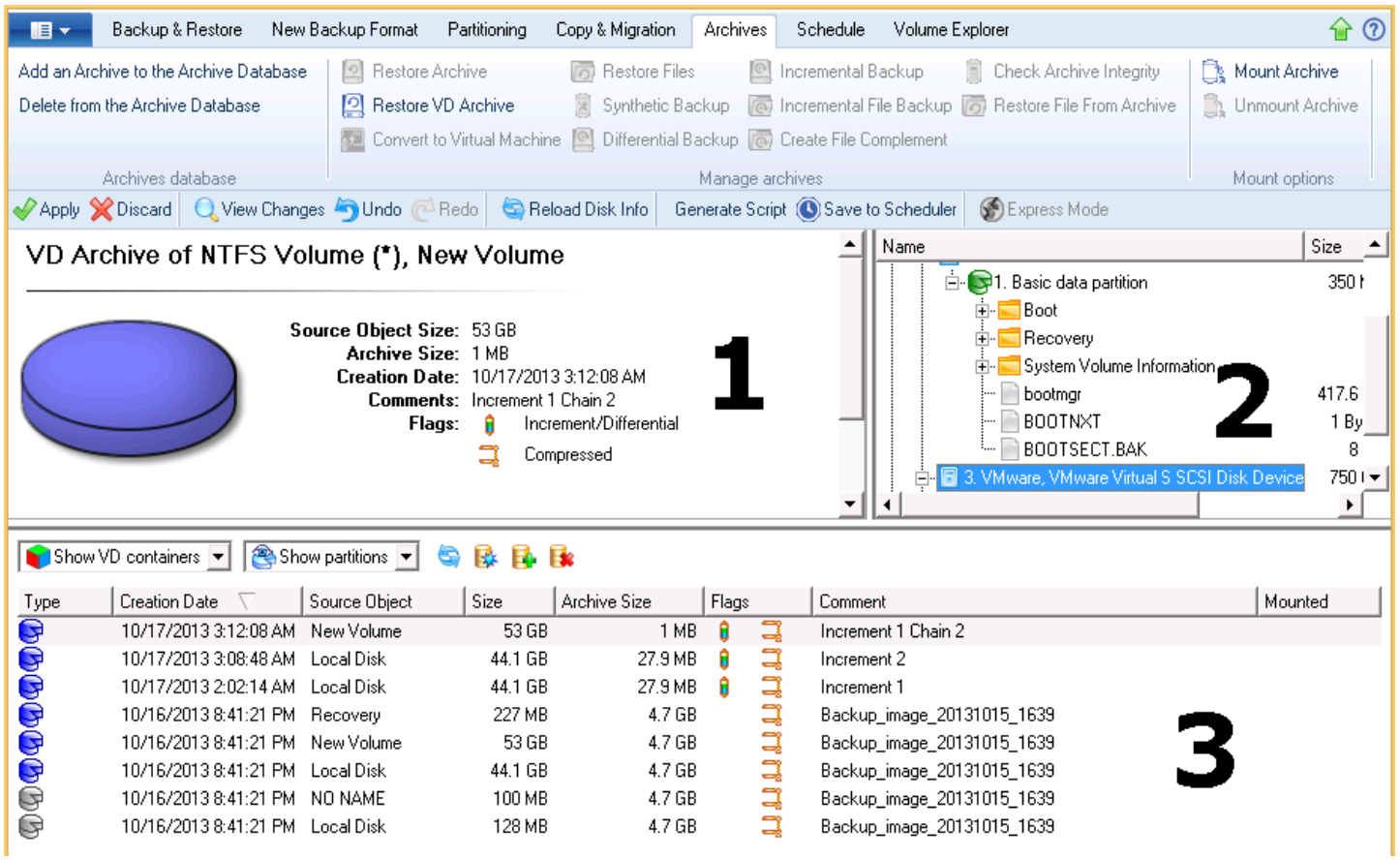

1. **Properties Panel** that displays properties of the selected image.

2. Volume Explorer that enables to access the selected image as a regular folder to explorer its contents or to retrieve certain files.

3. **Archive List** that displays a list of images contained in the Archive Database (if any). Besides the program provides all the necessary functionality to manage backup images in the database (add, delete, mount, refresh, etc.).

All panels offer a synchronized layout and are separated by vertical and horizontal expandable sliders, allowing the user to customize the screen layout.

Data Backup and Rescue

In this chapter you will find all the information necessary to establish a reliable data protection system.

Creating Backup Images

Depending on a type of information you need to protect and the way this information should be processed, the program offers a number of handy backup wizards. To make your job with the program as easy and convenient as possible, all backup wizards share similar work algorithm. By going through steps of the wizard, you configure all the necessary settings to launch the backup operation. To minimize the possibility of making any mistake, the wizard provides auxiliary information on every single option. Moreover you can get an in-depth description to any setting, control, or field of the wizard just by clicking the hint button and then the object you need.

Smart Backup Wizard Startup

- Click the **Backup & Restore** tab on the Ribbon Panel, then select **Smart Backup**.

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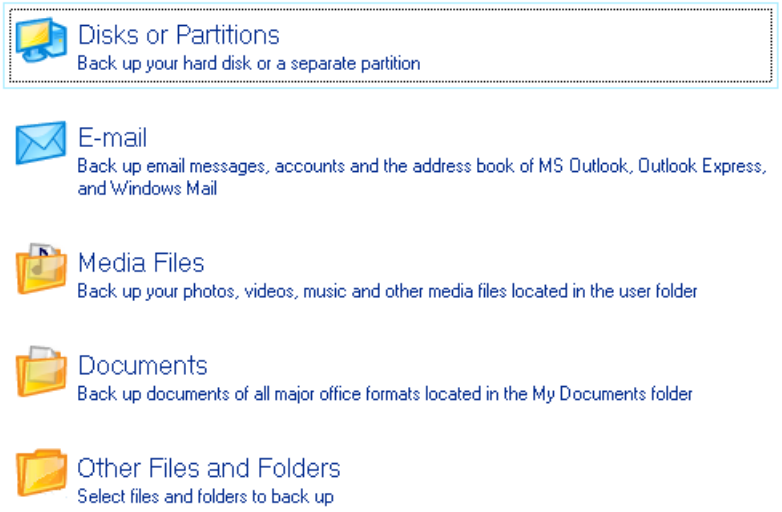
There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.

Smart Backup Wizard Setup

The wizard offers the following steps to accomplish the backup operation:

- **The object to back up**. Click on a section you find answering to your task.


Disks or Partitions
Back up your hard disk or a separate partition
E-mail
Back up email messages, accounts and the address book of MS Outlook, Outlook Express, and Windows Mail
Media Files
Back up your photos, videos, music and other media files located in the user folder
Documents
Back up documents of all major office formats located in the My Documents folder
Other Files and Folders
Select files and folders to back up

- **Disk or Partitions** to create a sector-based backup of the whole disk system, or only separate partitions;

- **E-mail** to create a file-based backup of e-mail databases, accounts and address books of MS Outlook, MS Express, and Windows Mail;

- **Media Files** to create a file-based backup of all media files (photo, video, music, etc) stored in the My Documents folder;

- **Documents** to create a file-based backup of all office documents stored in the My Documents folder;

- **Other Files and Folders** to create a file-based backup of any files and folders.

If selecting Disk or Partitions or Other Files and Folders you will need to specify more exactly the object of operation. To know more on the subject, please consult the Backup Scenarios chapter.

- **Name and location of the resulted image**. Provide a file name for the new image and its exact location. The program automatically offers an easy to understand name containing the date and the time of the archive creation, which can anyway be modified.

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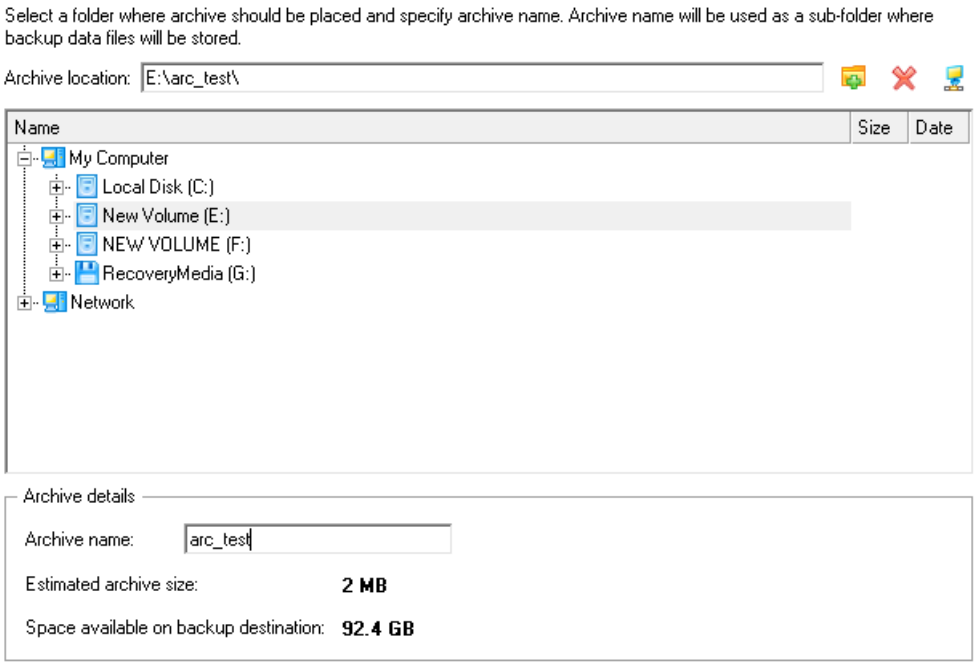
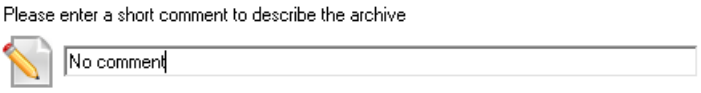

Select a folder where archive should be placed and specify archive name. Archive name will be used as a sub-folder where backup data files will be stored.
Archive location: E:\arc_test\
Name
Size
Date
My Computer
Local Disk (C:)
New Volume (E:)
NEW VOLUME (F:)
RecoveryMedia (G:)
Network
Archive details
Archive name: arc_test
Estimated archive size: 2 MB
Space available on backup destination: 92.4 GB

The program automatically calculates size of the future archive and informs the user about space available on the selected destination.

- **Archive Comment**. You can add some additional description to the archive that will later help to distinguish it from the others.



Result

After the backup operation is completed you receive an image of the selected object. This image is placed into the specified destination, its features defined by the wizard.

Available operation scenarios:

- Backing up a hard disk or partition to the Backup Capsule
- Backing up a hard disk or partition to external media (CD/DVD)
- Backing up a hard disk or partition to a network drive
- Backing up files to an FTP/SFTP server
- Backing up a dual boot Mac to an external USB drive
- Backing up files to a local mounted/unmounted (without drive letter assigned) partition
- Creating a differential to a full partition backup
- Creating a sector increment to a full partition backup
- Creating a file increment to a full partition backup
- Creating an increment to a full file backup

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- Creating a cyclic partition backup
- Merging a full partition backup with one of its differentials

Restoring System and Data

The program includes a convenient and reliable restore wizard. With its help you can restore all types of backup images created with the program. It provides easy to understand instructions to configure and perform all the necessary settings. Moreover you can get an in-depth description to any setting, control, or field of the wizard just by clicking the hint button and then the object you need.

Startup

- Click the **Backup & Restore** tab on the Ribbon Panel, then select **Restore**.

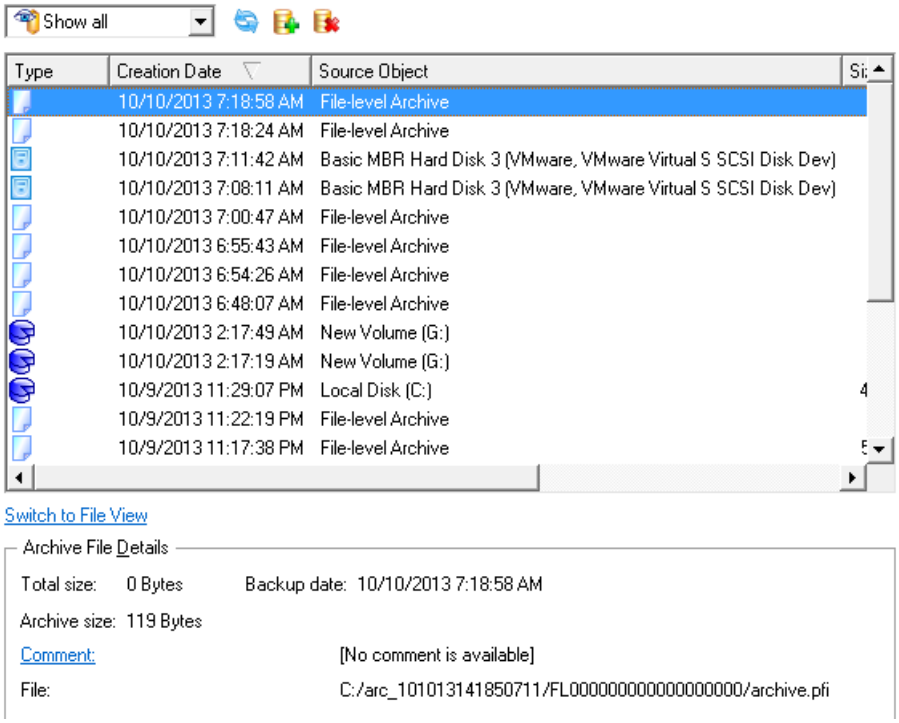
There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.

Setup

The wizard offers the following steps to accomplish the restore operation:

- **A backup image to be restored**. The Browse for Archive page enables to find a backup image you need.

  By clicking the **Switch to Archive List View** link, you can see a list of images contained in the Archive Database (if any).


Show all
Type
Creation Date
Source Object
10/10/2013 7:18:58 AM File-level Archive
10/10/2013 7:18:24 AM File-level Archive
10/10/2013 7:11:42 AM Basic MBR Hard Disk 3 (VMware, VMware Virtual S SCSI Disk Dev)
10/10/2013 7:08:11 AM Basic MBR Hard Disk 3 (VMware, VMware Virtual S SCSI Disk Dev)
10/10/2013 7:00:47 AM File-level Archive
10/10/2013 6:55:43 AM File-level Archive
10/10/2013 6:54:26 AM File-level Archive
10/10/2013 6:48:07 AM File-level Archive
10/10/2013 2:17:49 AM New Volume (G:)
10/10/2013 2:17:19 AM New Volume (G:)
10/9/2013 11:29:07 PM Local Disk (C:)
10/9/2013 11:22:19 PM File-level Archive
10/9/2013 11:17:38 PM File-level Archive
Switch to File View
Archive File Details
Total size: 0 Bytes
Backup date: 10/10/2013 7:18:58 AM
Archive size: 119 Bytes
Comment:
[No comment is available]
File:
C:/arc_101013141850711/FL00000000000000000000/archive.pfi

  To get a clear-cut picture on properties of the required image, just click on it and the section below will (i.e. Archive File Details) display a short description.

To know more on the subject, please consult the Viewing Image Properties chapter.

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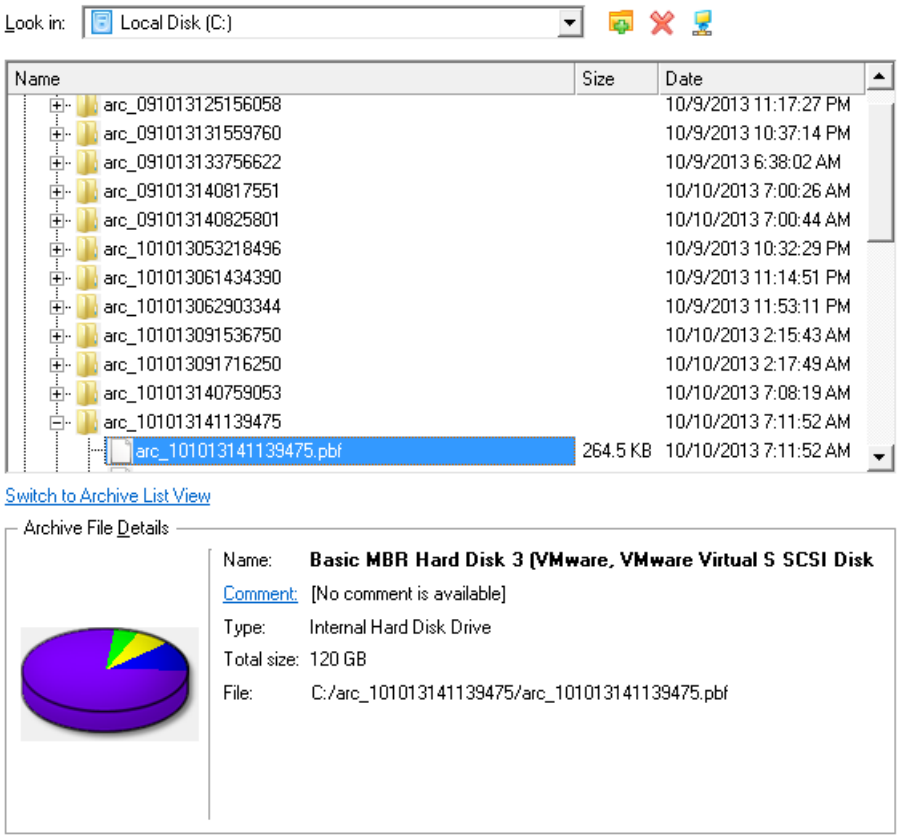
By clicking the **Switch to File View** link, you can find the required image in the browser-like window. The section below (i.e. Archive File Details) will also display a short description of the selected image.



Moreover, on this page you've got the possibility to create new folders, delete existing files/folders or map network drives by clicking the appropriate buttons.

To know more on the subject, please consult the Viewing Image Properties chapter.

File Backup Restore

- **Data to restore**. You've got the option to restore not only the entire archive, but separate items of it (the so called selective restore functionality) by marking checkboxes next to the data items you need.

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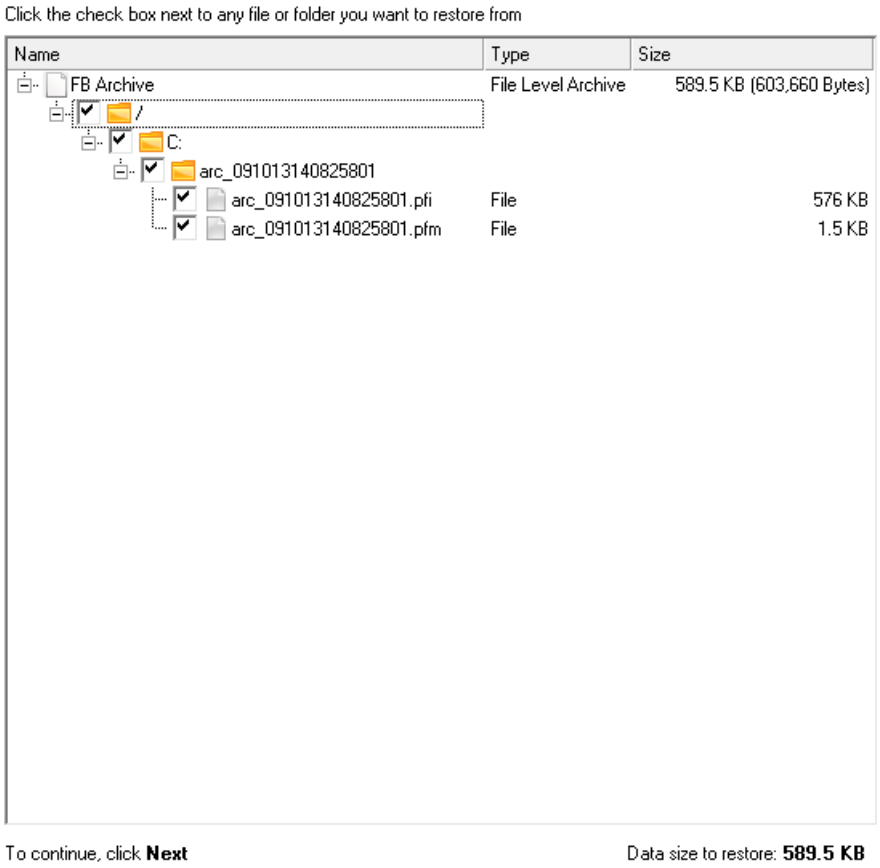
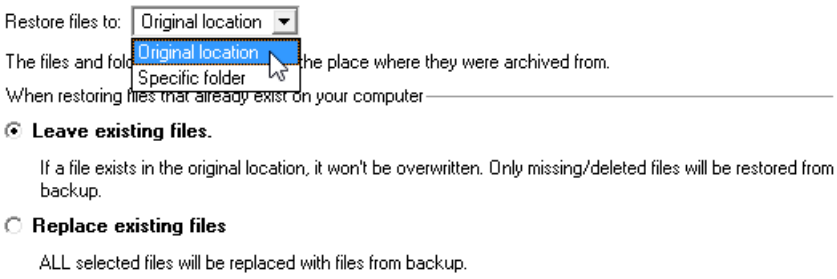


- **A place to restore**. From the pull-down list you can choose whether to restore contents of the backup image to its original location or specify some other one.


Restore files to:
Original location
Original location
Specific folder
When restoring files that already exist on your computer
Leave existing files.
If a file exists in the original location, it won't be overwritten. Only missing/deleted files will be restored from backup.
Replace existing files
ALL selected files will be replaced with files from backup.

Besides if you select the Original location option, you can additionally define whether to replace already existing files during the restore operation (good for recovering presumably corrupted files) or leave them intact (good for recovering accidentally deleted files).

Sector Backup Restore

- **Data to restore.** You've got the option to restore not only the entire archive, but separate items of it (the so called selective restore functionality) by marking checkboxes next to the data items you need.

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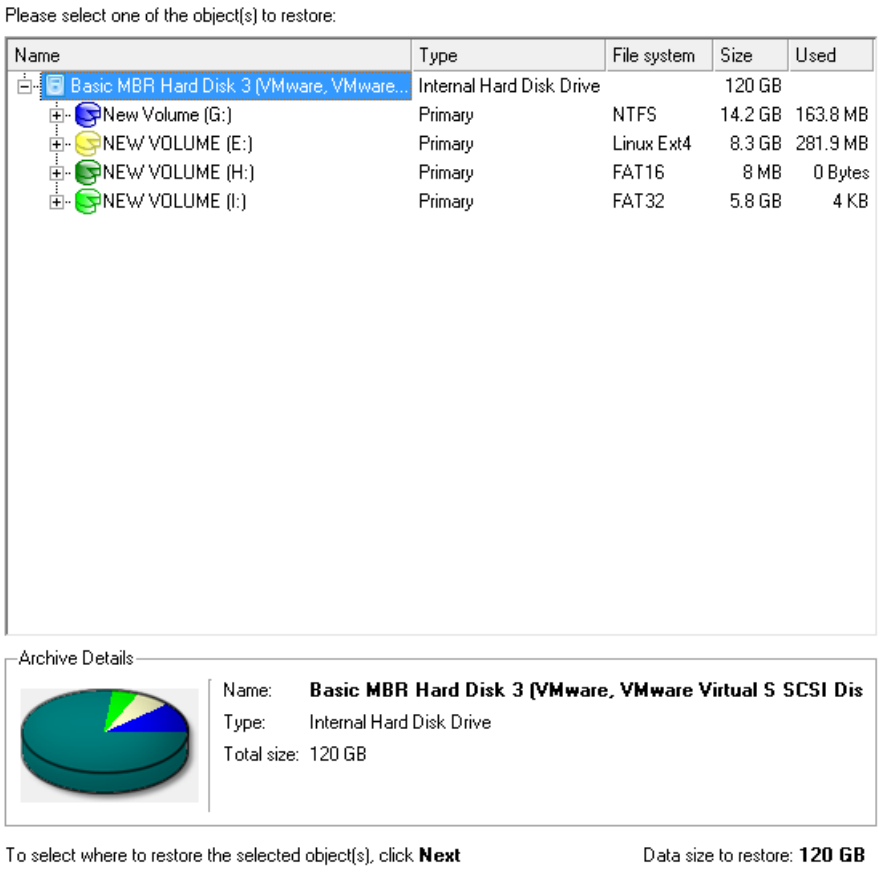
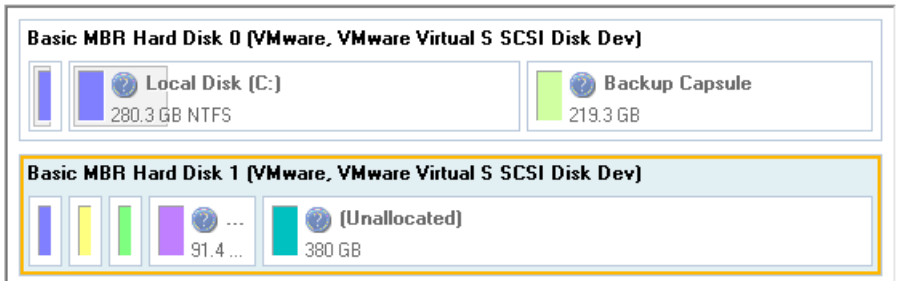


If you select separate files or folders to restore, the wizard will continue working as though you've got to do with a file backup.

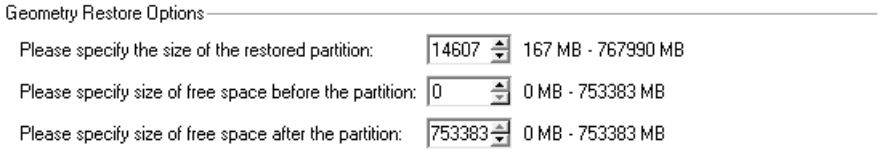
- **A place to restore**. Selecting the destination, please note - all contents on the disk selected for restoring purposes will be deleted during the operation.


Basic MBR Hard Disk 0 (VMware, VMware Virtual S SCSI Disk Dev)
Local Disk (C:)
280.3 GB NTFS
Backup Capsule
219.3 GB
Basic MBR Hard Disk 1 (VMware, VMware Virtual S SCSI Disk Dev)
...
91.4 ...
(Unallocated)
380 GB

To help you get a clear-cut picture of the operation outcome, the program allows inspecting the resulted disk layout.

Restoring Partition:

- **Size of the restored volume and free space before and after it on the disk.**


Geometry Restore Options
Please specify the size of the restored partition:
14607
167 MB - 767990 MB
Please specify size of free space before the partition:
0
0 MB - 753383 MB
Please specify size of free space after the partition:
753383
0 MB - 753383 MB

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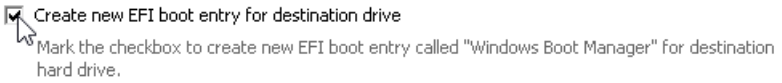
- **Drive letter assignment after restore**. The pull-down list contains vacant drive letters that can be associated with the restored partition.

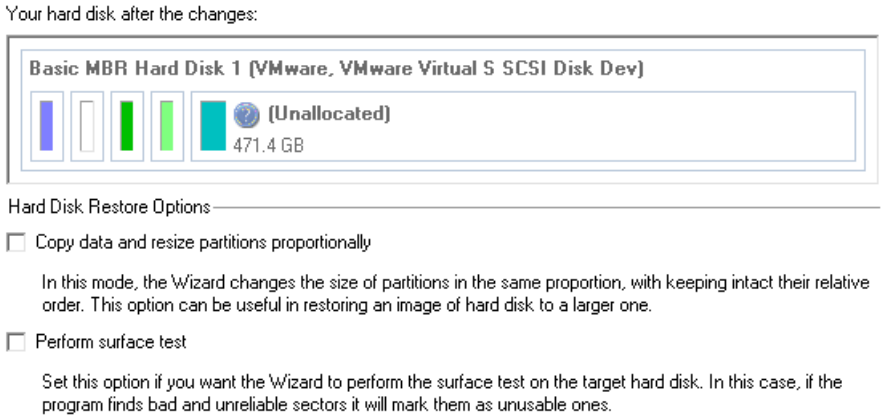
- **Create new EFI boot entry for destination drive**. If you've got to do with a 64-bit Windows configured to the uEFI boot mode, the following option will become available for you to define what instance of Windows OS you'd like to boot from once the operation is over. Anyway you can specify a bootable device at any time through Boot Corrector.


Create new EFI boot entry for destination drive
Mark the checkbox to create new EFI boot entry called "Windows Boot Manager" for destination hard drive.

The option above will be available to the user only if the target disk becomes Bootable GPT as a result of the migration process.

Restoring Hard Disk:

All contents on the disk selected for restoring purposes will be deleted during the operation.


Your hard disk after the changes:
Basic MBR Hard Disk 1 (VMware, VMware Virtual S SCSI Disk Dev)
(Unallocated)
471.4 GB
Hard Disk Restore Options
Copy data and resize partitions proportionally
In this mode, the Wizard changes the size of partitions in the same proportion, with keeping intact their relative order. This option can be useful in restoring an image of hard disk to a larger one.
Perform surface test
Set this option if you want the Wizard to perform the surface test on the target hard disk. In this case, if the program finds bad and unreliable sectors it will mark them as unusable ones.

- **Copy data and resize partitions proportionally**. If this option is activated, the program proportionally changes the size of partitions keeping their relative order intact. The option can be useful when restoring to a larger hard disk.
- **Perform surface test**. Define whether the surface test will be accomplished during the operation or not.
- **Create new EFI boot entry for destination drive**. If you've got to do with a 64-bit Windows configured to the uEFI boot mode, the following option will become available for you to define what instance of Windows OS you'd like to boot from once the operation is over. Anyway you can specify a bootable device at any time through Boot Corrector.

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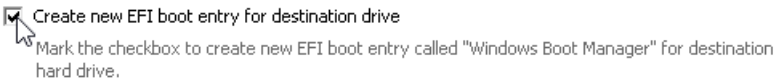
Create new EFI boot entry for destination drive
Mark the checkbox to create new EFI boot entry called "Windows Boot Manager" for destination hard drive.

The option above will be available to the user only if the target disk becomes Bootable GPT as a result of the migration process.

Result

The wizard will restore the archived data, and make it available to use in the operating system.

To make Windows bootable on different hardware, please additionally complete the P2P Adjust OS Wizard.

Available operation scenarios:

- Restoring a hard disk from the bootable Backup Capsule
- Restoring a system partition from external media (CD/DVD)
- Restoring a system partition from a network drive
- Restoring a system partition from a local drive
- Restoring a dual boot Mac from an external USB drive
- Restoring a file increment
- Restoring a file increment to a partition backup
- Restoring separate files and folders from a backup

Copy Tasks

In this chapter you will find all the information necessary to make a copy of a hard disk or a separate partition.

Cloning Hard Disks

You can clone a hard disk of any file system. During the hard disk copying process, the program moves controlling records of used partitioning scheme, the bootstrap code and on-disk partitions. That's why this operation cannot be substituted by simply copying all on-disk partitions.

Copy Hard Disk Wizard

The Copy Hard Disk Wizard is a traditional-like wizard. By going through its steps, you configure all the necessary settings to launch the copy operation. To minimize the possibility of making any mistake, the wizard provides auxiliary information on every single option. Moreover you can get an in-depth description to any setting, control, or field of the wizard just by clicking the hint button and then the object you need.

You need at least two hard disks to carry out this operation.

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Startup

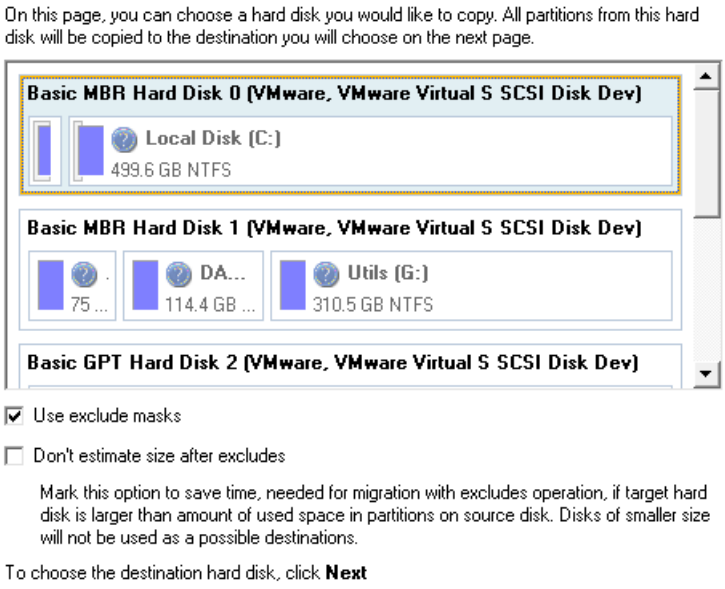
- Click the **Copy & Migration** tab on the Ribbon Panel, then select **Copy Hard Disk**.

There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.

Setup

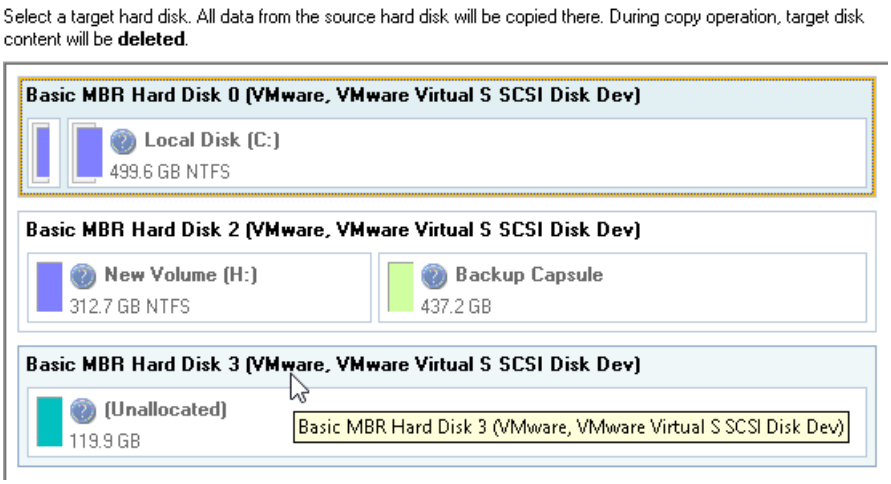
The wizard offers the following steps to accomplish the copy hard disk operation:

- **The hard disk to copy**. Select a hard disk you want to copy.


On this page, you can choose a hard disk you would like to copy. All partitions from this hard disk will be copied to the destination you will choose on the next page.
Basic MBR Hard Disk 0 (VMware, VMware Virtual S SCSI Disk Dev)
Local Disk (C:)
499.6 GB NTFS
Basic MBR Hard Disk 1 (VMware, VMware Virtual S SCSI Disk Dev)
DA...
114.4 GB ...
Utils (G:)
310.5 GB NTFS
Basic GPT Hard Disk 2 (VMware, VMware Virtual S SCSI Disk Dev)
Use exclude masks
Don't estimate size after excludes
Mark this option to save time, needed for migration with excludes operation, if target hard disk is larger than amount of used space in partitions on source disk. Disks of smaller size will not be used as a possible destinations.
To choose the destination hard disk, click Next

  - **Use exclude masks**. By default the program doesn't take into account exclude filters set in the Settings dialog. If you need to use them, please mark the checkbox and see existing/specify additional filters on the next page of the wizard.
  - **Don't estimate size after excludes**. You can save time by suppressing calculation of the resulted amount of data to copy after using excludes. Please note however, if you use this option, drives that smaller in size than the source disk will be unavailable to use as destination.

- **The target hard disk**. Select a hard disk (if several) where all data of the source disk will be copied to.


Select a target hard disk. All data from the source hard disk will be copied there. During copy operation, target disk content will be deleted.
Basic MBR Hard Disk 0 (VMware, VMware Virtual S SCSI Disk Dev)
Local Disk (C:)
499.6 GB NTFS
Basic MBR Hard Disk 2 (VMware, VMware Virtual S SCSI Disk Dev)
New Volume (H:)
312.7 GB NTFS
Backup Capsule
437.2 GB
Basic MBR Hard Disk 3 (VMware, VMware Virtual S SCSI Disk Dev)
(Unallocated)
119.9 GB
Basic MBR Hard Disk 3 (VMware, VMware Virtual S SCSI Disk Dev)

- **Copy parameters**. The wizard enables to specify the following options:

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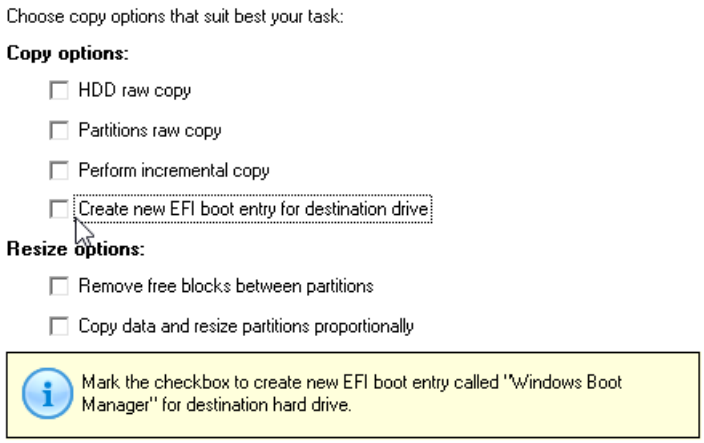
Choose copy options that suit best your task:
Copy options:
HDD raw copy
Partitions raw copy
Perform incremental copy
Create new EFI boot entry for destination drive
Resize options:
Remove free blocks between partitions
Copy data and resize partitions proportionally
Mark the checkbox to create new EFI boot entry called "Windows Boot Manager" for destination hard drive.

Copy options

- **HDD raw copy** to copy the hard disk in the sector-by-sector mode, thus ignoring its information structure (e.g. unallocated space or unused sectors of existing partitions will be processed as well). This can help to avoid problems with hidden data created by certain applications or the system administrator. However, it will take more time to accomplish the operation.

- **Partition raw copy** to copy the on-disk partitions in the sector-by-sector mode to successfully process unknown file systems. However it is not recommended to enable this option when working with supported file systems as it takes more time to accomplish the operation.

- **Create new EFI boot entry for destination drive**. If you've got to do with a 64-bit Windows configured to the uEFI boot mode, the following option will become available for you to define what instance of Windows OS you'd like to boot from once the operation is over. Anyway you can specify a bootable device at any time through Boot Corrector.

The option above will be available to the user only if the target disk becomes Bootable GPT as a result of the migration process.

Resize options

- **Remove free blocks between partitions** not to keep blocks of free space between partitions on the targeted hard disk.

- **Copy data and resize partitions proportionally** to make the program proportionally change the size of partitions keeping their relative order intact. The option can be useful when upgrading the hard disk to a larger one.

Result

After the operation is completed, you receive a fully functional duplicate of the existing hard disk.

To make Windows bootable on different hardware, please additionally complete the P2P Adjust OS Wizard.

Available operation scenarios:

- Migrating system to a new HDD (up to 2.2TB in size)

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Cloning Partitions

You can duplicate partitions to protect oneself from downtime in case of a system malfunction or for cloning sample partitions. The program enables to duplicate all partition data including files, the exact structure of directories and file system metadata (location of files, security information, access quotas, etc.).

The Copy Partition Wizard will help you copy a partition of any file system. To minimize the possibility of making any mistake, the wizard provides auxiliary information on every single option. Moreover you can get an in-depth description to any setting, control, or field of the wizard just by clicking the hint button and then the object you need.

Startup

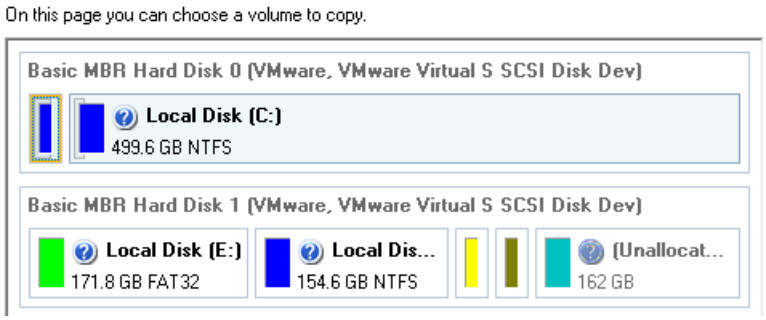
- Click the **Copy & Migration** tab on the Ribbon Panel, then select **Copy Partition**.

There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.

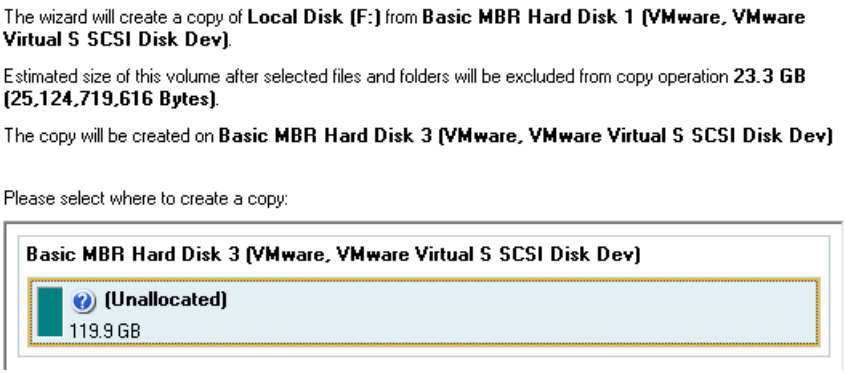
Setup

The wizard offers the following steps to accomplish the copy partition operation:

- **The partition to copy**. Select a partition you want to copy.


On this page you can choose a volume to copy.
Basic MBR Hard Disk 0 (VMware, VMware Virtual S SCSI Disk Dev)
Local Disk (C:)
499.6 GB NTFS
Basic MBR Hard Disk 1 (VMware, VMware Virtual S SCSI Disk Dev)
Local Disk (E:)
171.8 GB FAT32
Local Dis...
154.6 GB NTFS
(Unallocat...
162 GB

- **Destination disk**. Select a hard disk with enough unallocated space to perform the operation.


The wizard will create a copy of Local Disk (F:) from Basic MBR Hard Disk 1 (VMware, VMware Virtual S SCSI Disk Dev).
Estimated size of this volume after selected files and folders will be excluded from copy operation 23.3 GB (25,124,719,616 Bytes).
The copy will be created on Basic MBR Hard Disk 3 (VMware, VMware Virtual S SCSI Disk Dev)
Please select where to create a copy:
Basic MBR Hard Disk 3 (VMware, VMware Virtual S SCSI Disk Dev)
(Unallocated)
119.9 GB

The program enables to copy a partition to a block of free space, which is smaller than the partition itself, taking into account only actual amount of data.

- **Copy parameters**. The wizard enables to specify the following options:

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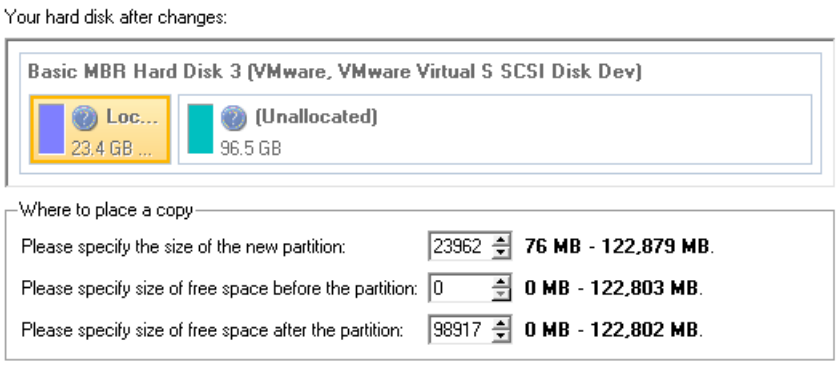
Your hard disk after changes:
Basic MBR Hard Disk 3 (VMware, VMware Virtual S SCSI Disk Dev)
Loc...
23.4 GB ...
(Unallocated)
96.5 GB
Where to place a copy
Please specify the size of the new partition:
23962
76 MB - 122,879 MB.
Please specify size of free space before the partition:
0
0 MB - 122,803 MB.
Please specify size of free space after the partition:
98917
0 MB - 122,802 MB.

- **Partition size**. Define the size (in Mb) of the copied partition.

- **Free space before**. Define the position (in Mb) of the copied partition relative to the beginning of the available range of disk space.

- **Free space after**. Define the amount of trailing free space (in Mb) at the end of the available range of disk space.

Partition size and position may also be defined by using the drag-and-drop technique. To do that, just carry out the required operation on the Disk Map.

- **Create new EFI boot entry for destination drive**. If you've got to do with a 64-bit Windows configured to the uEFI boot mode, the following option will become available for you to define what instance of Windows OS you'd like to boot from once the operation is over. Anyway you can specify a bootable device at any time through Boot Corrector.

The option above will be available to the user only if the target disk becomes Bootable GPT as a result of the migration process.

Result

After the operation is completed you receive a fully functional duplicate of the existing partition.

To make Windows bootable on different hardware, please additionally complete the P2P Adjust OS Wizard.

Partition Management

In this chapter you will find all the information necessary to carry out partitioning operations supported by the program.

Basic Partitioning Operations

Here you can learn how to accomplish basic partitioning operations (create, format, delete).

Creating Partitions

The program provides the ability to create a new partition within a block of un-partitioned space.

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Restrictions

1. Do not use the Create Partition function in order to undelete the last deleted partition.
2. The program allows creating new partitions only within blocks of un-partitioned space. It cannot convert a free space on an existing partition to a new partition.
3. The program cannot create new partitions on Dynamic Disks.

Create Partition Wizard Startup

- Click the **Partitioning** tab on the Ribbon Panel, then select **Create Partition**.

There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.

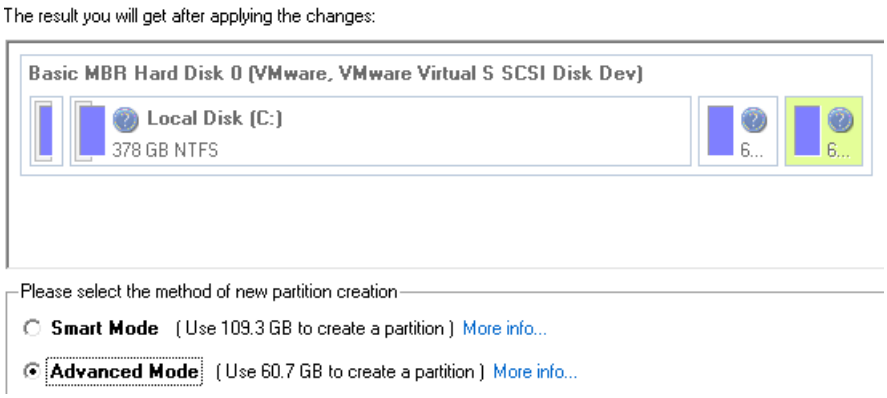
Dialog Startup

1. Select a block of free space on the Disk Map;
2. Call a context menu for the selected object by the right mouse click, then select **Create Partition**.

There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.

Express Create Partition Wizard Setup

Thanks to a highly intelligent work algorithm, the wizard requires minimal involvement in the operation, thus you only need to choose a method you find the most suitable to create the partition (if several available), which actually differ in the amount of space to allocate. For easy perception, you can see the resulted disk layout on the disk map by selecting this or that mode.


The result you will get after applying the changes:
Basic MBR Hard Disk 0 (VMware, VMware Virtual S SCSI Disk Dev)
Local Disk (C:)
378 GB NTFS
6...
6...
Please select the method of new partition creation
Smart Mode (Use 109.3 GB to create a partition) More info...
Advanced Mode (Use 60.7 GB to create a partition) More info...

The number of available methods depends on your disk layout.

To learn more on the way the wizard works, please click the corresponding link on the first page of the wizard.

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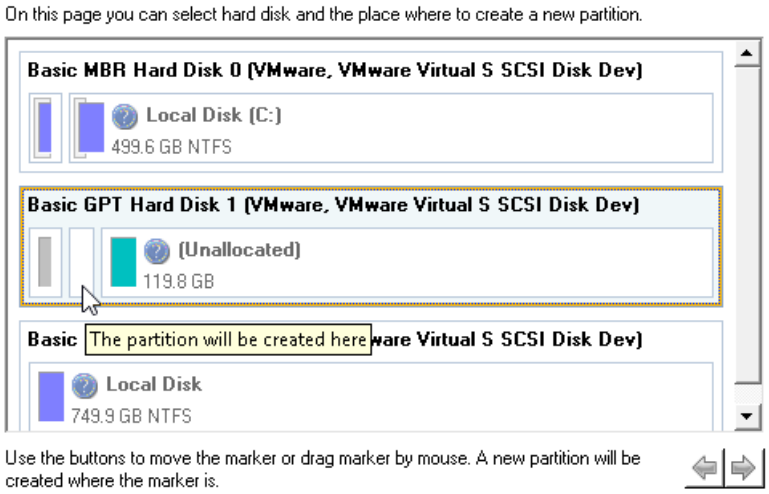
Create Partition Wizard Setup

The wizard offers the following steps to accomplish the operation:

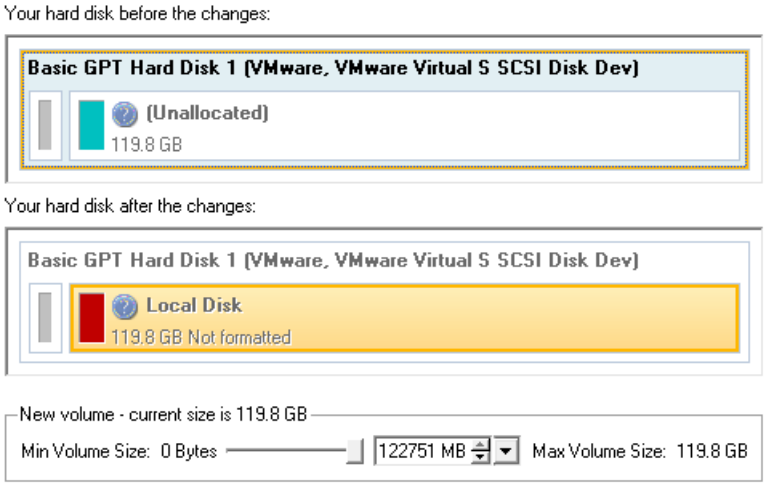
- **Partition destination**. Select a hard disk (if the computer has several hard disks) and then choose position for the future partition on the disk: at the end (preferable), at the beginning or somewhere in the middle between other partitions.


On this page you can select hard disk and the place where to create a new partition.
Basic MBR Hard Disk 0 (VMware, VMware Virtual S SCSI Disk Dev)
Local Disk (C:)
499.6 GB NTFS
Basic GPT Hard Disk 1 (VMware, VMware Virtual S SCSI Disk Dev)
(Unallocated)
119.8 GB
Basic
The partition will be created here
ware Virtual S SCSI Disk Dev)
Local Disk
749.9 GB NTFS
Use the buttons to move the marker or drag marker by mouse. A new partition will be created where the marker is.

By default, the program allows you to create a new partition only as the last primary or as the last logical drive within the extended partition. However, by activating the advance mode on the first page of the wizard you can remove this restriction that in its turn might result in some boot problems.

- **Partition size**. There is no restriction on size of the future partition, merely depending on space available on the hard disk.

  If there is not enough free space in one block, the wizard enables to redistribute free space, joining all free space blocks together into one united block and moving partitions when necessary. If the total amount of free space is still not enough, it is possible to split a fragment of space from one of the existing partitions, thus resizing it.


Your hard disk before the changes:
Basic GPT Hard Disk 1 (VMware, VMware Virtual S SCSI Disk Dev)
(Unallocated)
119.8 GB
Your hard disk after the changes:
Basic GPT Hard Disk 1 (VMware, VMware Virtual S SCSI Disk Dev)
Local Disk
119.8 GB Not formatted
New volume - current size is 119.8 GB
Min Volume Size: 0 Bytes
122751 MB
Max Volume Size: 119.8 GB

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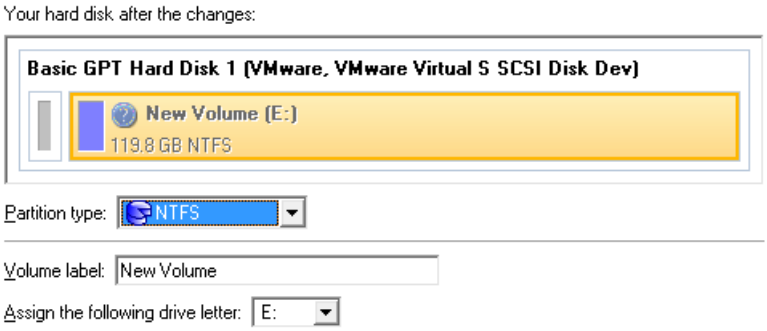
If a partition to resize is locked and cannot be processed, the wizard makes the system reboot to create the partition and then automatically boots the system again. (The rebooting mechanism is different for different versions of Windows.)

You can also choose whether the future partition will be primary or logical by marking the appropriate checkbox.

- **Partition properties**. On the next page of the wizard you can set a number of additional parameters:


Your hard disk after the changes:
Basic GPT Hard Disk 1 (VMware, VMware Virtual S SCSI Disk Dev)
New Volume (E:)
119.8 GB NTFS
Partition type: NTFS
Volume label: New Volume
Assign the following drive letter: E:

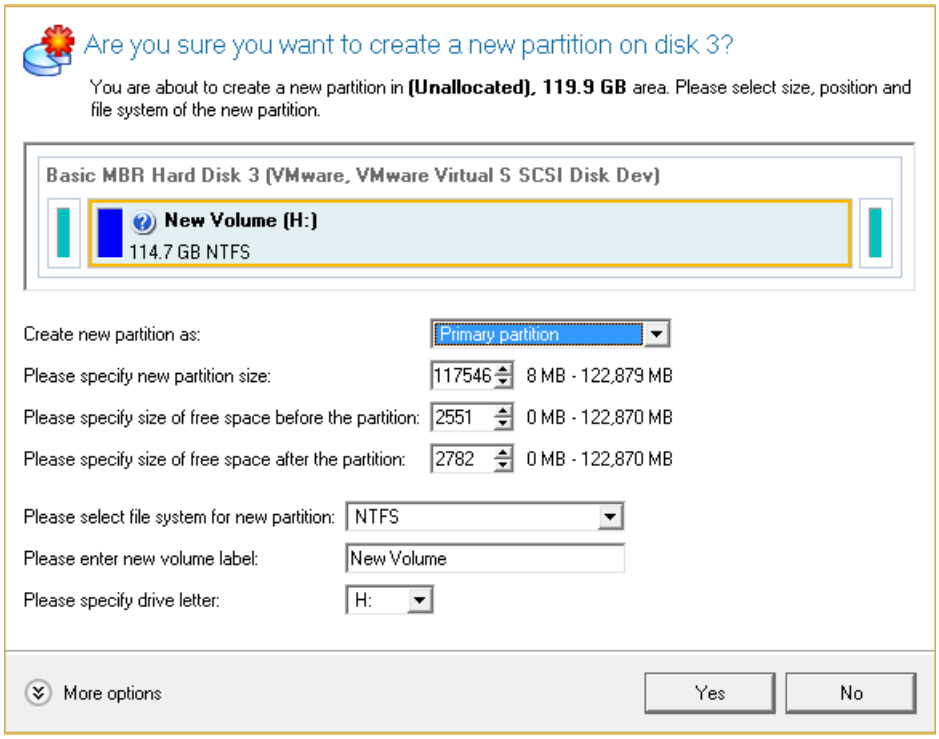
- **Partition type**. From the pull-down list select a file system the newly created partition will be formatted to, otherwise the partition will remain unformatted (so that it will not be ready to use).

- **Volume label**. Enter a label for the selected partition in this textual field. It is an irrelevant parameter usually used for drive identification.

- **Surface test level**. Define the level of the surface check to make the program find bad and unstable sectors and mark them unusable in the file system metadata.

Dialog Setup

Initially the program suggests some consistent values for all parameters. In most cases, you can just press the Yes button to confirm the operation.


Are you sure you want to create a new partition on disk 3?
You are about to create a new partition in (Unallocated), 119.9 GB area. Please select size, position and file system of the new partition.
Basic MBR Hard Disk 3 (VMware, VMware Virtual S SCSI Disk Dev)
New Volume (H:)
114.7 GB NTFS
Create new partition as: Primary partition
Please specify new partition size: 117546 8 MB - 122,879 MB
Please specify size of free space before the partition: 2551 0 MB - 122,870 MB
Please specify size of free space after the partition: 2782 0 MB - 122,870 MB
Please select file system for new partition: NTFS
Please enter new volume label: New Volume
Please specify drive letter: H:
More options
Yes
No

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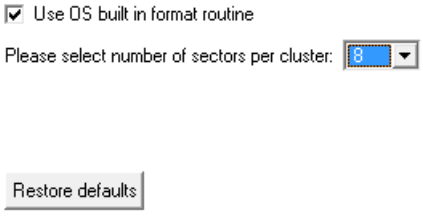
- **Define whether the partition will be Primary, Extended or Logical**. You can choose the desired partition type from the pull-down list. As a matter of fact, the available alternatives fundamentally depend on the selected block of free space - within the Logical free space, only Logical partitions can be created; Within the Primary free space, both Primary partitions or the Extended Partition can be created.
- **Partition Size**. Define the size (in Mb) of the new partition.
- **Free space before**. Define the position (in Mb) of the new partition relative to the beginning of the block of free space.
- **Free space after**. Define the amount of trailing free space (in Mb) at the end of the new partition.

Partition size and position may also be defined by using the drag-and-drop technique. To do that, just carry out the required operation on the Disk Map. The virtual operations are to be available.

- **File system for new partition**. From the pull-down list select a file system the newly created partition will be formatted to, otherwise the partition will remain unformatted (so that it will not be ready to use).
- **Volume label**. Enter a label for the selected partition in this textual field. It is an irrelevant parameter usually used for drive identification.
- **Drive letter assignment**. The pull-down list contains vacant drive letters that can be associated with the newly formatted partition.

In addition, there is the possibility to make further detailed settings (although the default values will do in most cases). To activate the advance mode, you need to click the More options button at the foot of the dialog page. Depending on the chosen file system, the following options become available:



- **Use OS built-in routine**. Mark the option to restrict the available values according to the used OS.
- **The amount of sectors per cluster**. Define the Cluster Size for the formatted partition with this spinner control.

Number of available options depends on the selected file system type.

Result

After the operation is completed you receive a fully functional partition.

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Formatting Partitions

Any partition should contain some file system to be used for keeping data. The process of installing a file system is commonly known as formatting. A huge variety of file systems have been developed these days.

Supported File Systems

The program provides the ability to format partitions of the following file systems:

- FAT12 & FAT16
- FAT32
- HFS+
- NTFS
- Ext2
- Ext3
- Ext4
- Linux Swap v. 2

Wizard Startup

- Click the **Partitioning** tab on the Ribbon Panel, then select **Format Partition**.

There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.

Dialog Startup

1. Select a partition on the Disk Map;
2. Call a context menu for the selected object by the right mouse click, then select **Format Partition**.

There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.

Wizard Setup

The wizard offers the following steps to accomplish the operation:

- **Partition to format**. Select a hard disk (if the computer has several hard disks) and then the required partition to format.

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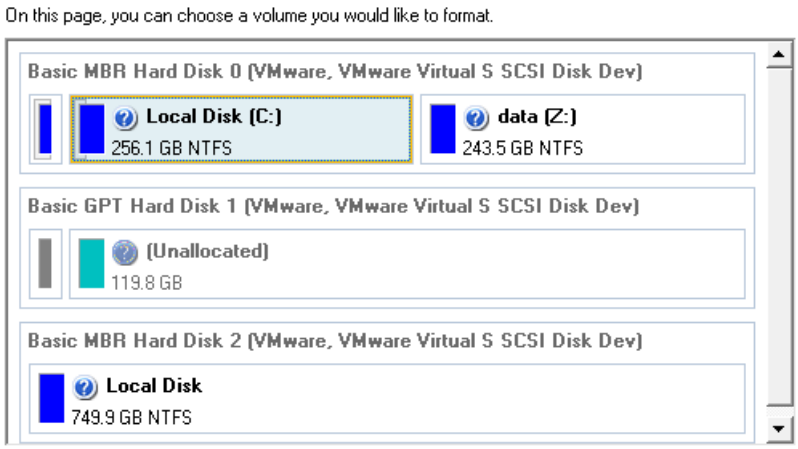
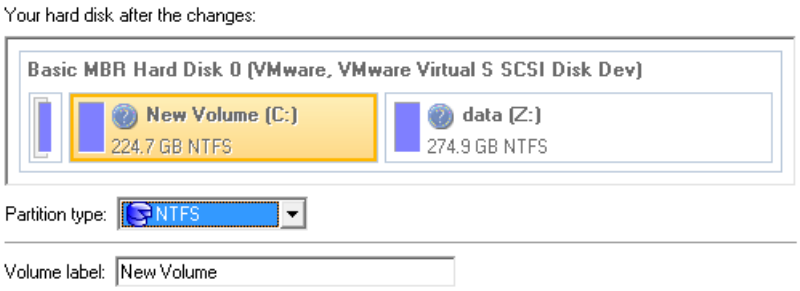

On this page, you can choose a volume you would like to format.
Basic MBR Hard Disk 0 (VMware, VMware Virtual S SCSI Disk Dev)
Local Disk (C:)
256.1 GB NTFS
data (Z:)
243.5 GB NTFS
Basic GPT Hard Disk 1 (VMware, VMware Virtual S SCSI Disk Dev)
(Unallocated)
119.8 GB
Basic MBR Hard Disk 2 (VMware, VMware Virtual S SCSI Disk Dev)
Local Disk
749.9 GB NTFS

As a result of this operation contents of the selected partition will be lost.

- **Partition properties**. On the next page of the wizard you can set the following partition parameters:

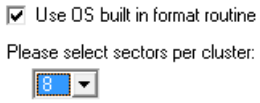


- **Partition type**. From the pull-down list select the desired file system type. In fact, the program displays only those file systems that can correctly be placed to the selected partition, taking its capacity into account.

- **Volume label**. Enter a label for the selected partition in this textual field. It is an irrelevant parameter usually used for drive identification.

- **Drive letter assignment**. The pull-down list contains vacant drive letters that can be associated with the newly formatted partition.

In addition, there is the possibility to make further detailed settings (although the default values will do in most cases). To activate the advance mode, you need to mark the appropriate option at the foot of the page. When it is marked, the next page enables to define:



- **Use OS built-in routine**. Mark the checkbox to restrict the available values according to the used OS.

- **The amount of sectors per cluster**. Define the Cluster Size for the formatted partition with this spinner control.

Number of available options depends on the selected file system type.

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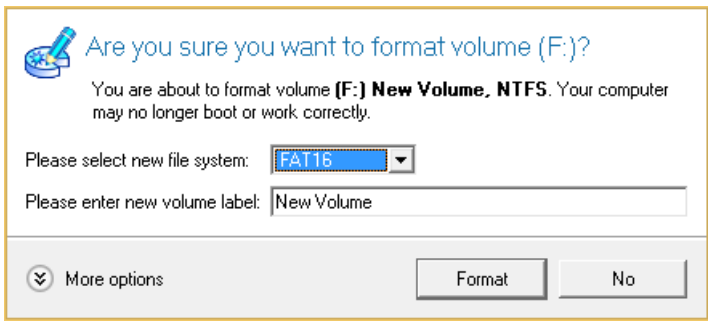
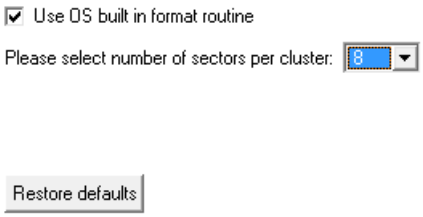
Dialog Setup

Initially the program suggests some consistent values for all parameters. In most cases, you can just press the Format button to confirm the operation.


Are you sure you want to format volume (F:)?
You are about to format volume (F:) New Volume, NTFS. Your computer may no longer boot or work correctly.
Please select new file system:
FAT16
Please enter new volume label:
New Volume
More options
Format
No

- **File system**. From the pull-down list select the desired file system type. In fact, the program displays only those file systems that can correctly be placed to the selected partition, taking its capacity into account.
- **Volume label**. Enter a label for the selected partition in this textual field. It is an irrelevant parameter usually used for drive identification.

In addition, there is the possibility to make further detailed settings (although the default values will do in most cases). To activate the advance mode, you need to click the More options button at the foot of the dialog page. Depending on the chosen file system, the following options become available:



- **Use OS built-in routine**. Mark the checkbox to restrict the available values according to the used OS.
- **The amount of sectors per cluster**. Define the Cluster Size for the formatted partition with this spinner control.

Number of available options depends on the selected file system type.

Result

After the operation is completed you receive a fully functional partition formatted to the specified file system.

Deleting Partitions

Wizard Startup

- Click the **Partitioning** tab on the Ribbon Panel, then select **Delete Partition**.

There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.

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Dialog Startup

In order to start the operation you should take the following steps:

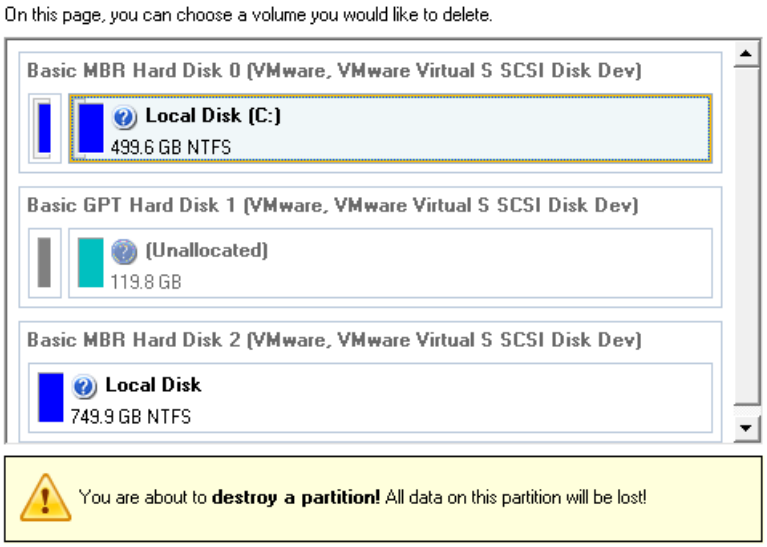
1. Select a partition on the Disk Map;
2. Call a context menu for the selected object by the right mouse click, then select Create **Delete Partition**.

There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.

Wizard Setup

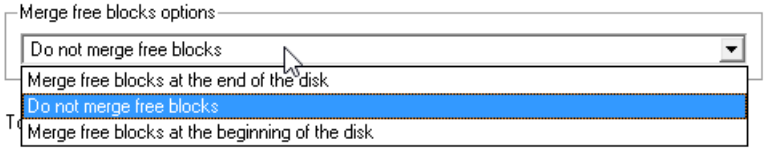
The wizard offers the following steps to accomplish the operation:

- **Partition to delete**. Select a hard disk (if the computer has several hard disks) and then the required partition to delete.


On this page, you can choose a volume you would like to delete.
Basic MBR Hard Disk 0 (VMware, VMware Virtual S SCSI Disk Dev)
Local Disk (C:)
499.6 GB NTFS
Basic GPT Hard Disk 1 (VMware, VMware Virtual S SCSI Disk Dev)
(Unallocated)
119.8 GB
Basic MBR Hard Disk 2 (VMware, VMware Virtual S SCSI Disk Dev)
Local Disk
749.9 GB NTFS
You are about to destroy a partition! All data on this partition will be lost!

As a result of this operation contents of the selected partition will be lost.

- **Merge free blocks**. As a result of the operation you may get several blocks of the unallocated space on the hard disk. So choose whether to merge them all and place at the beginning of the disk or at the end by selecting the required operation from the pull-down list.


Merge free blocks options
Do not merge free blocks
Merge free blocks at the end of the disk
Do not merge free blocks
Merge free blocks at the beginning of the disk

Dialog Setup

Initially the program suggests you just to remove references to the selected partition from the Partition Table.

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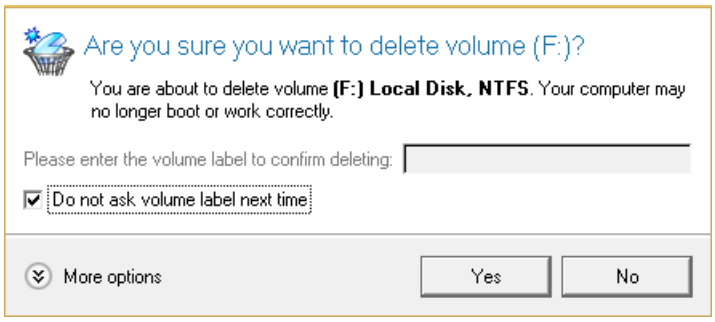
Are you sure you want to delete volume (F:)?
You are about to delete volume (F:) Local Disk, NTFS. Your computer may no longer boot or work correctly.
Please enter the volume label to confirm deleting:
Do not ask volume label next time
More options
Yes
No

- **Enter the volume label to confirm deleting**. To confirm deletion of the selected partition, enter its Volume Label. The current volume label is displayed above.
- **Do not ask volume label next time**. Mark the option to inhibit confirmation next time you start the dialog.

Result

By default, the operation takes only a fraction of a second. However, the program waits until Windows completes the modification of the disk layout.

Advanced Partitioning Operations

Here you can learn how to accomplish advanced partitioning operations.

Undeleting Partitions

When simply deleting a partition (without additional wiping) disk management software only removes references to it in the Partition Table, thus leaving the possibility to recover it later.

The program enables to find and recover these partitions. A restored partition will be fully functional, as long as other partitions were not created, moved or exceeded the disk space occupied by that partition. That is why the program offers this function only for blocks of free space.

The operation can be accomplished with the Undelete Partition Wizard.

Startup

- Click the **Partitioning** tab on the Ribbon Panel, then select **Undelete Partitions**.

There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.

Setup

The wizard offers the following steps to accomplish the undelete partition operation:

- **Free blocks to scan for lost partitions**. Choose a free block from a tree-like list of available hard disks.

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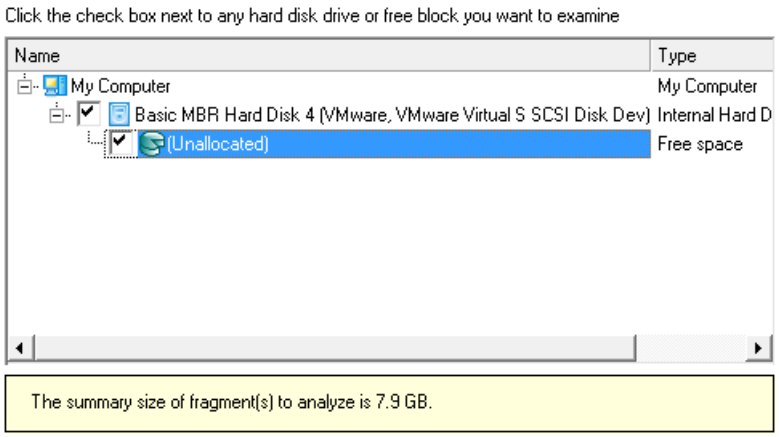
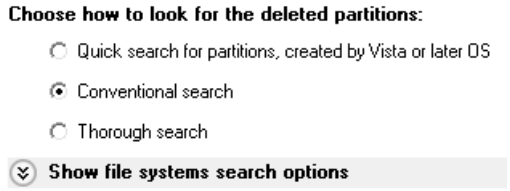
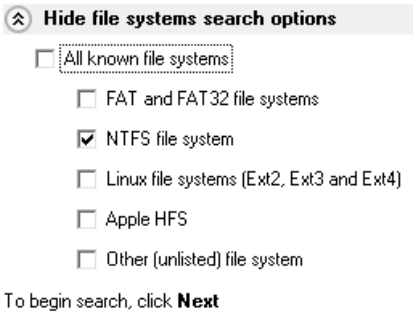

Click the check box next to any hard disk drive or free block you want to examine
Name
Type
My Computer
My Computer
Basic MBR Hard Disk 4 (VMware, VMware Virtual S SCSI Disk Dev)
Internal Hard D
(Unallocated)
Free space
The summary size of fragment(s) to analyze is 7.9 GB.

- **Search method**. By default, the wizard selects the fastest search method for your operating system. In most cases that will do to find any accidentally deleted partition. However if you're under Windows XP for instance (the Conventional Search option is selected), but the deleted partition you're looking for has been created with the Disk Management utility under Vista, the wizard won't be able to find this partition, unless you manually select the appropriate option (Quick Search for Partitions Created by Vista or Later OS). Moreover if the wizard still fails to find the partition you need, you can select the Thorough Search option to scan every single sector in the specified search area to get the most accurate results.


Choose how to look for the deleted partitions:
Quick search for partitions, created by Vista or later OS
Conventional search
Thorough search
Show file systems search options

To know more on the available search methods, please use the context sensitive hint system.

- **File system filter**. By default, the wizard will search for all known file systems. However, by clicking on the appropriate option on the second page of the wizard, you can specify only those file systems you need.


Hide file systems search options
All known file systems
FAT and FAT32 file systems
NTFS file system
Linux file systems (Ext2, Ext3 and Ext4)
Apple HFS
Other (unlisted) file system
To begin search, click Next

- **A partition to undelete** (if several). By default, the program searches records of any deleted partition ever existed on the selected block of free space. So you can get several partitions to choose from.

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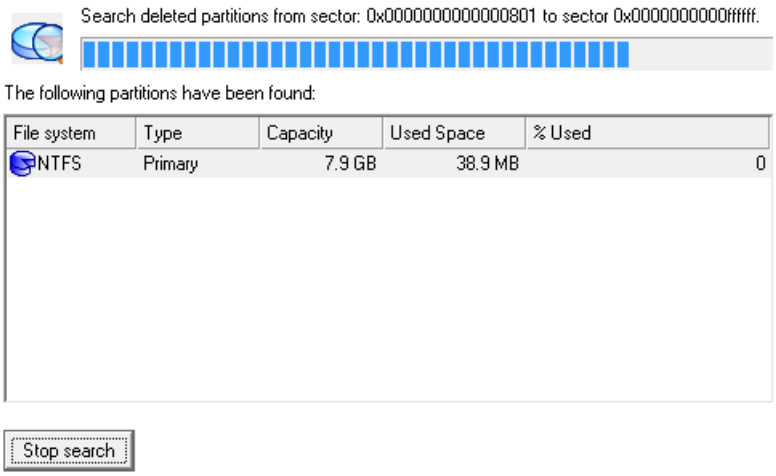


Most likely the required partition will be found first. If so, you may abort the search operation by pressing the Stop search button.

Result

After the operation is completed you receive a fully functional partition.

Changing Partition Attributes

This chapter explains how you can change partition attributes (Active flag, Hidden flag, Volume Label, etc.).

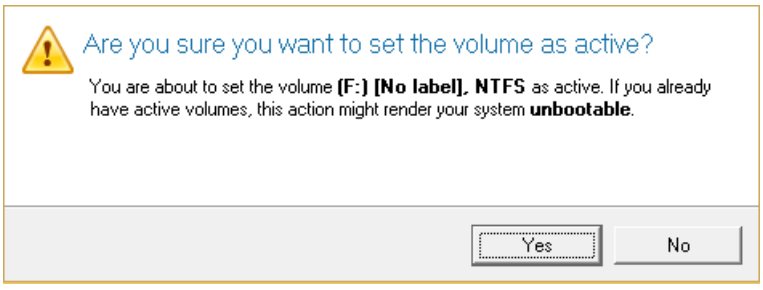
Mark Partition Active/Inactive

The program enables to set an active/inactive flag for primary partitions of a hard disk. By default, an operating system will boot only if its partition is active or bootable.

In order to mark a partition active/inactive you should take the following steps:

1. Select a primary partition on the Disk Map.
2. Call a context menu for the selected object by the right mouse click, then select **Mark Partition as Active/Inactive**.

There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.


Are you sure you want to set the volume as active?
You are about to set the volume (F:) [No label], NTFS as active. If you already have active volumes, this action might render your system unbootable.
Yes
No

3. The operation will be performed immediately after confirmation.

There can only be one active partition on a hard disk, otherwise your operating system will fail to boot.

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Hide/Unhide Partition

The program allows you to hide/unhide primary and logical partitions. By default, an operating system does not mount hidden partitions, thus preventing access to their contents.

In order to hide/unhide a partition you should take the following steps:

1. Select a partition on the Disk Map.
2. Call a context menu for the selected object by the right mouse click, then select **Hide/Unhide Partition**.

There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.

3. The operation will be performed immediately after confirmation.

It is strongly recommended not to hide the system partition. Otherwise your operating system will fail to boot.

Set Label of a Partition

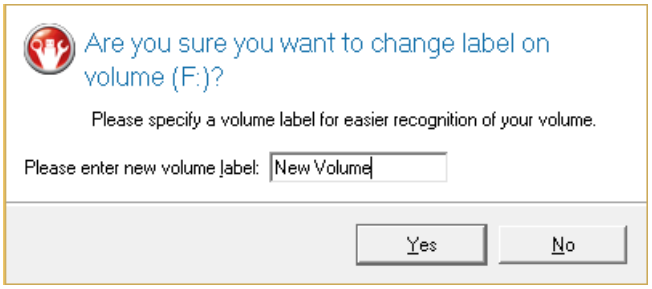
The Partition Label is a small textual field (up to 11 characters) that is located in the partition's boot sector. It is detectable by any partitioning tool and is used for notification purposes only.

In order to change a partition label you should take the following steps:

1. Select a partition on the Disk Map.
2. Call a context menu for the selected object by the right mouse click, then select **Change Volume Label**.

There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.

3. Enter a label for the selected partition.


Are you sure you want to change label on volume (F:)?
Please specify a volume label for easier recognition of your volume.
Please enter new volume label:
New Volume
Yes
No

4. The operation will be performed immediately after confirmation.

Change Partition ID

Partition ID is a file system identifier. It is saved in the Partition Table and is used to quickly detect a partition of the supported type. By manually changing its value, you can manipulate accessibility of partitions.

In order to change a partition ID you should take the following steps:

1. Select a partition on the Disk Map.

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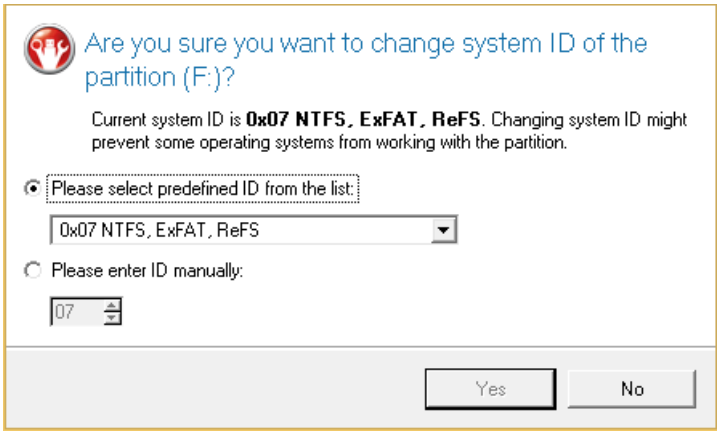
2. Call a context menu for the selected object by the right mouse click, then select **Change Partition ID…**

There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.

3. Set a new ID for the selected partition.


Are you sure you want to change system ID of the partition (F:)?
Current system ID is 0x07 NTFS, ExFAT, ReFS. Changing system ID might prevent some operating systems from working with the partition.
Please select predefined ID from the list:
0x07 NTFS, ExFAT, ReFS
Please enter ID manually:
07
Yes
No

- **Predefined ID**. Select from the pull-down list the required ID.
- **Enter ID manually**. With the spinner control set the required ID value. It has to be a 1-2 digit hexadecimal number.

4. The operation will be performed immediately after confirmation.

Change Serial Number of a Partition

FAT16, FAT32, and NTFS file systems include the Serial Number parameter. A partition's serial number is saved in the boot sector. Its value is generated while formatting.

The program enables to modify the serial number parameter for FAT16, FAT32, or NTFS partitions without re-formatting.

In order to change a serial number you should take the following steps:

1. Select a partition on the Disk Map.
2. Call a context menu for the selected object by the right mouse click, then select **Change Serial Number**.

There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.

3. Enter a new serial number for the selected partition. It should contain 8 hexadecimal figures (0..9 or A..F). The operation cannot proceed until you enter all 8 symbols.

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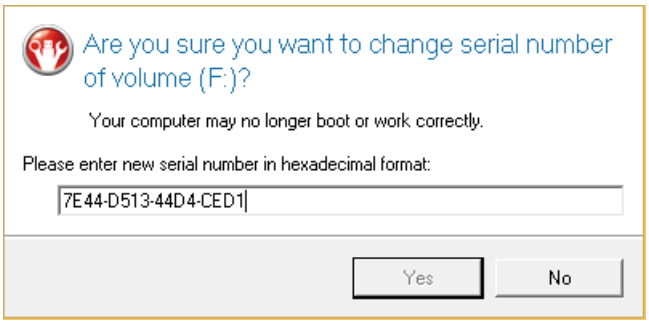

Are you sure you want to change serial number of volume (F:)?
Your computer may no longer boot or work correctly.
Please enter new serial number in hexadecimal format:
7E44-D513-44D4-CED1
Yes
No

4. The operation will be performed immediately after confirmation.

Hard Disk Management

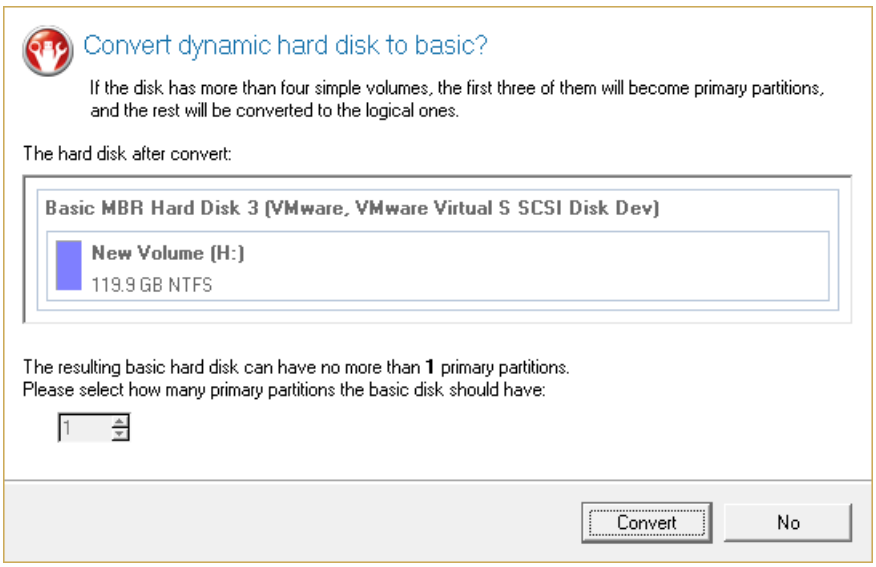
In this chapter you will find all the information necessary to carry hard disk operations supported by the program.

Converting Dynamic MBR to Basic

The program allows you to convert a dynamic MBR disk containing simple volumes into a basic one while keeping its contents intact.

In order to convert a dynamic MBR disk into basic you should take the following steps:

1. Select a dynamic MBR disk containing simple volumes on the Disk Map.
2. Call a context menu for the selected object by the right mouse click, then select **Convert to Basic…**
3. Set the required number of primary partitions if necessary. According to the DOS partitioning scheme a hard disk can have up to four Primary partitions. If there is an Extended partition on the disk, only three primary partitions are allowed. That is why if a dynamic disk contains several simple volumes the program enables to choose the number of primary partitions. The rest of them if any will automatically be converted to logical disks within the Extended partition.


Convert dynamic hard disk to basic?
If the disk has more than four simple volumes, the first three of them will become primary partitions, and the rest will be converted to the logical ones.
The hard disk after convert:
Basic MBR Hard Disk 3 (VMware, VMware Virtual S SCSI Disk Dev)
New Volume (H:)
119.9 GB NTFS
The resulting basic hard disk can have no more than 1 primary partitions.
Please select how many primary partitions the basic disk should have:
1
Convert
No

The program can only process dynamic disks containing solid simple volumes (without extension).

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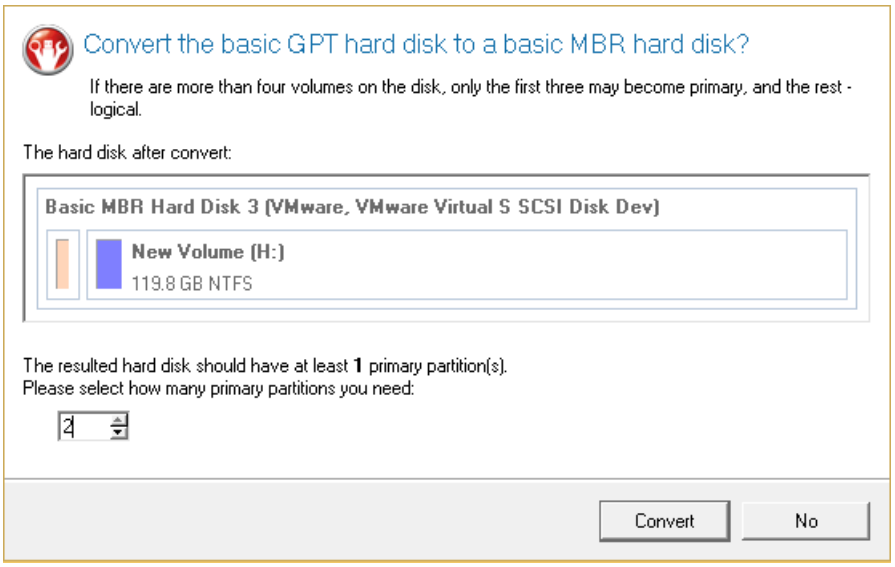
Converting GPT to Basic MBR

The program allows you to convert a basic or a dynamic GPT disk containing simple volumes into a basic MBR disk while keeping its contents intact.

In order to convert a basic or a dynamic GPT disk into a basic MBR disk you should take the following steps:

1. Select a basic or a dynamic GPT disk containing simple volumes on the Disk Map.
2. Call a context menu for the selected object by the right mouse click, then select **Convert to Basic MBR Hard Disk…**
3. Set the required number of primary partitions if necessary. According to the DOS partitioning scheme a hard disk can have up to four Primary partitions. If there is an Extended partition on the disk, only three primary partitions are allowed. That is why if a GPT disk contains several volumes the program enables to choose the number of primary partitions. The rest of them if any will automatically be converted to logical disks within the Extended partition.


Convert the basic GPT hard disk to a basic MBR hard disk?
If there are more than four volumes on the disk, only the first three may become primary, and the rest - logical.
The hard disk after convert:
Basic MBR Hard Disk 3 (VMware, VMware Virtual S SCSI Disk Dev)
New Volume (H:)
119.8 GB NTFS
The resulted hard disk should have at least 1 primary partition(s).
Please select how many primary partitions you need:
2
Convert
No

The program can only process dynamic GPT disks containing solid simple volumes (without extension).

Converting Basic MBR to GPT

The program allows you to easily convert a basic MBR disk into a basic GPT disk while keeping its contents intact. The operation is quite safe for the on-disk data, but you should know that only 64-bit Windows OSes since Vista are able to boot from this type of disks. So if you've got a 32-bit Windows OS accommodated on a disk you'd like to convert to GPT, it won't start up after the operation is over.

In order to convert a basic MBR disk to a basic GPT you should take the following steps:

1. Select a basic MBR hard disk on the Disk Map.
2. Call a context menu for the selected object by the right mouse click, then select **Hard Disk > Convert to GPT hard disk**.

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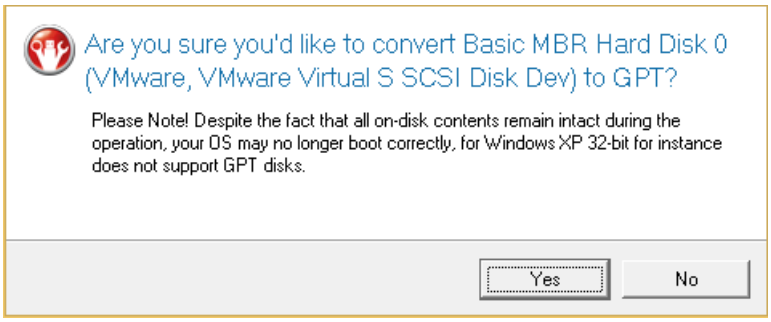

Are you sure you'd like to convert Basic MBR Hard Disk 0 (VMware, VMware Virtual S SCSI Disk Dev) to GPT?
Please Note! Despite the fact that all on-disk contents remain intact during the operation, your OS may no longer boot correctly, for Windows XP 32-bit for instance does not support GPT disks.
Yes
No

3. The operation will be performed immediately after confirmation.

The program can only convert basic MBR disks.

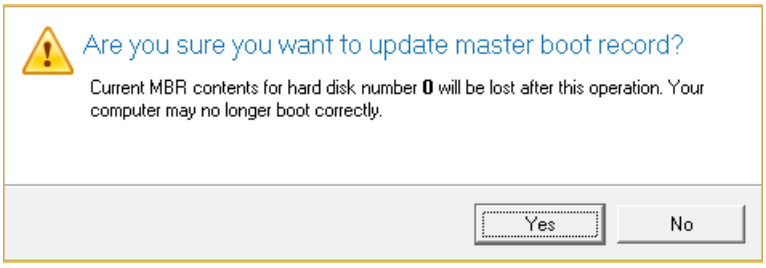
Updating MBR

The program enables to overwrite the current bootable code in the MBR (Master Boot Record) by the standard bootstrap code. This can help to repair a corrupted bootable code of a hard disk resulted from a boot virus attack or a malfunction of boot management software.

In order to update MBR of a hard disk you should take the following steps:

1. Select a hard disk on the Disk Map.
2. Call a context menu for the selected object by the right mouse click, then select **Update MBR**.

There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.


Are you sure you want to update master boot record?
Current MBR contents for hard disk number 0 will be lost after this operation. Your computer may no longer boot correctly.
Yes
No

3. The operation will be performed immediately after confirmation.

Changing Primary Slot

Different operating systems apply different approaches to enumeration of the primary partitions.

In Linux:

In Linux, every partition has a special symbolic name that encodes a hard disk containing a partition, and a partition itself. Partitions are addressed and accessed by using their symbolic names. Symbolic names are automatically generated by Linux in accordance with the order of hard disks in BIOS and the order of partition records in the Partition Table. Thus changing enumeration of the primary partitions can lead to changing of paths to some important resources.

In DOS:

The last versions of MS-DOS use a rather sophisticated algorithm for a drive letter assignment. A drive letter, which is assigned to a partition, depends on the order of records in the Partition Table. Thus changing enumeration of the

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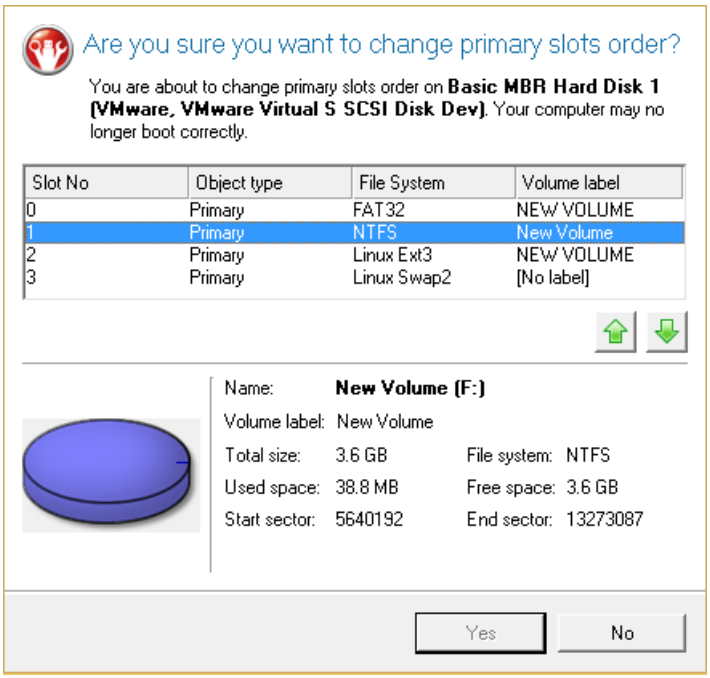
primary partitions affects the drive letters assignment. In early versions of MS-DOS, it could even lead to the unavailability of a partition.

The program provides the ability to change enumeration of the primary partitions. This feature will allow you to fix problems concerning an inappropriate order of partitions.

In order to modify enumeration of the primary partitions you should take the following steps:

1. Select a hard disk on the Disk Map.
2. Call a context menu for the selected object by the right mouse click, then select **Change Primary Slot**.

There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.


Are you sure you want to change primary slots order?
You are about to change primary slots order on Basic MBR Hard Disk 1 (VMware, VMware Virtual S SCSI Disk Dev). Your computer may no longer boot correctly.
Slot No
Object type
File System
Volume label
0 Primary FAT32 NEW VOLUME
1 Primary NTFS New Volume
2 Primary Linux Ext3 NEW VOLUME
3 Primary Linux Swap2 [No label]
Name: New Volume (F:)
Volume label: New Volume
Total size: 3.6 GB
File system: NTFS
Used space: 38.8 MB
Free space: 3.6 GB
Start sector: 5640192
End sector: 13273087
Yes
No

3. In the opened dialog you can see the current enumeration of the primary partitions of the selected hard disk in the Partition Table. To help you distinguish partitions from one another, the program provides the following parameters for every partition:

   - Slot
   - Volume
   - Partition type
   - File system
   - Partition size
   - Volume label

   There are two buttons on the right to move the selected partition up and down within the primary part of the Partition Table.

4. The operation will be performed immediately after confirmation.

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Task Scheduling

Automation of operations can really help you out when you've got to accomplish certain routine operations on a regular basis as it enables to execute them without your involvement while optimizing your computer's work-load.

Setting a Timetable

Thanks to the embedded Scheduler, you can set a timetable for execution of any operation. It has two categories for time settings (these correspond to appropriate items in the Schedule type menu):

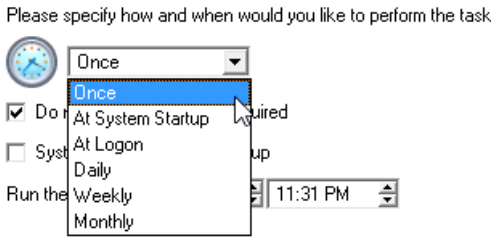
- **Initiating the operation by an event**:

  - One time only (i.e. the Once item)

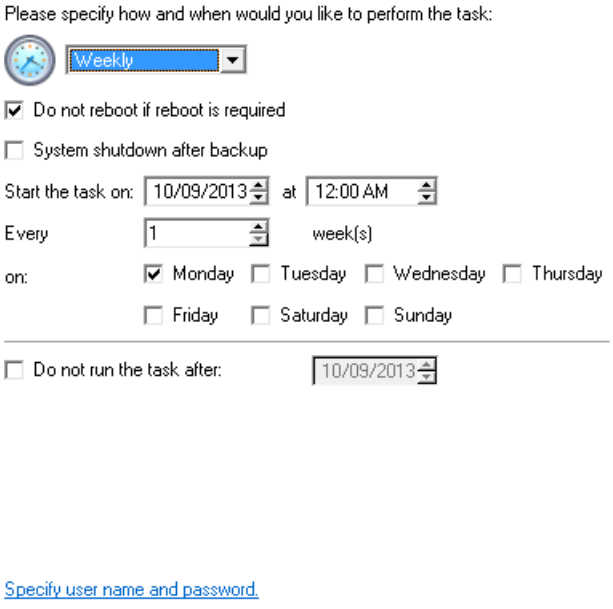
  - When the system starts (i.e. the At System Startup item)

  - When the user logs on (i.e. the At Logon item).

- **Initiating the operation periodically (i.e. Daily, Weekly, Monthly)**.



You need to select one of the variants. Depending on your choice, the scheduler displays a form that enables to set a timetable.


Please specify how and when would you like to perform the task:
Weekly
Do not reboot if reboot is required
System shutdown after backup
Start the task on: 10/09/2013 at 12:00 AM
Every 1 week(s)
on: Monday Tuesday Wednesday Thursday
Friday Saturday Sunday
Do not run the task after: 10/09/2013
Specify user name and password

To run the task in the log-off mode, please specify administering login info by following the appropriate link in the left lower corner of the page.

The Shutdown System on Complete option enables to automatically switch off the computer on the successful accomplishment of the operation.

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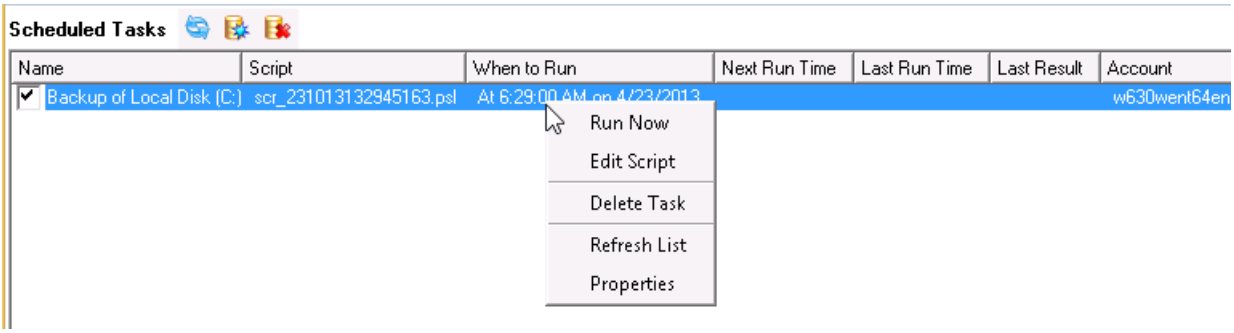
Managing Tasks

All scheduled tasks are placed in a separate list, which can be retrieved by clicking the Schedule tab on the Ribbon Panel:



On every task you can get in-depth information, including:

- The task name
- The full path to the generated script of the task
- Scheduled time of launch
- Statistics on the last launch
- Scheduled time of the next launch
- Used account information
- Comments to the task

To easily manage tasks, the program enables to arrange them according to a certain characteristic just by clicking on the required property.

This feature can be particularly beneficial when the Scheduled Tasks list contains too many items.

You can also enable/disable, rename, delete, refresh or modify properties of the selected task.

Task Editor

With the Task Editor you can easily modify properties of scheduled tasks. To do that, you should take the following steps:

1. Select a task on the Scheduled Tasks list.
2. Click the **Properties** button on the Scheduled Tasks list.

There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.

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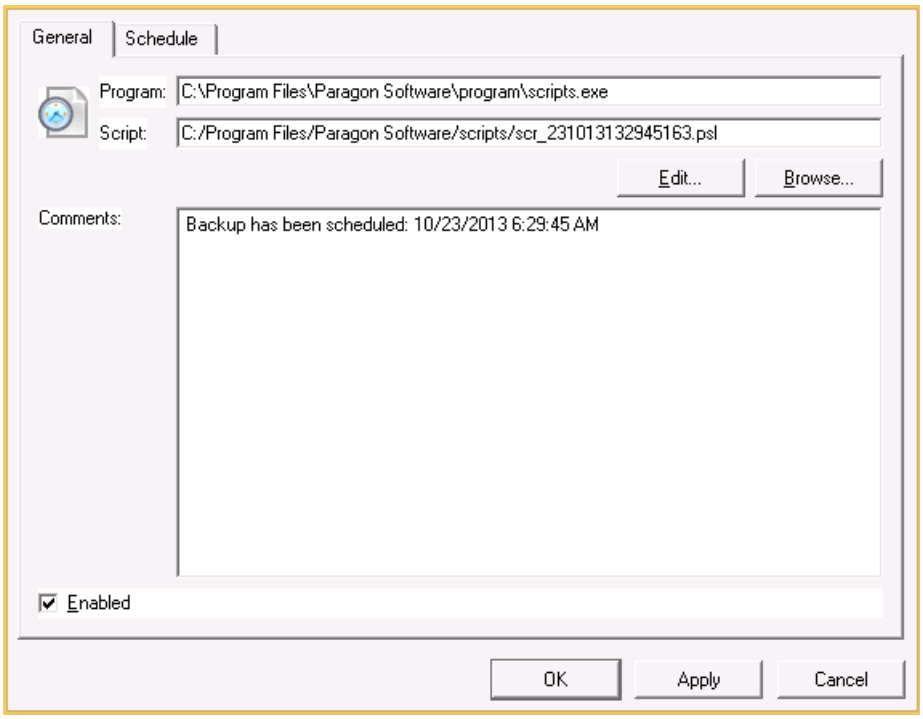

3. In the opened dialog window you can see two tabs - General and Schedule. Click the General tab to modify:
   - Full path to the macro-command program-interpreter, which describes the scheduled task;
   - Command line for starting the interpreter (i.e. the task described in macro-language)
   - Comments referring to the task
   - The option of enabling/disabling the task.

   By clicking the Schedule tab you can modify the task timetable.

In order to apply the changes, you need to click the Apply button at the foot of the dialog.

Creating a Scheduled Task

You can set a timetable for execution of any operation. For backup and copy operations the program offers handy wizards, while all the others can be scheduled with the Save to Scheduler dialog.

To create a scheduled task you should take the following steps:

1. Make sure the virtual mode of execution is enabled;
2. Carry out with the program all operations you need to schedule;
3. Call the Save to Scheduler dialog by clicking its icon on the Virtual Operations Bar;

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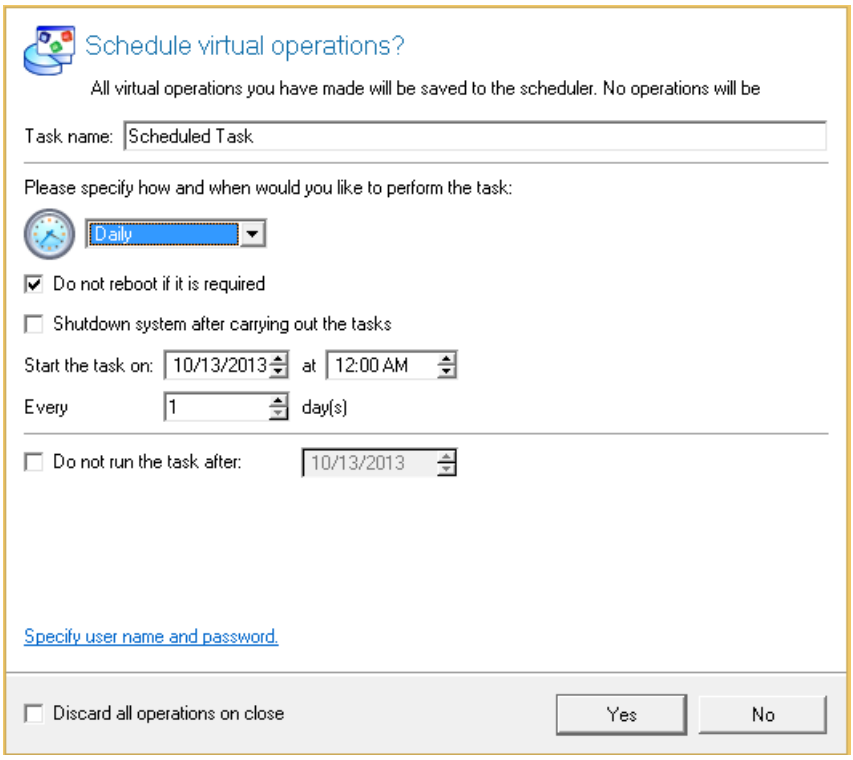
Schedule virtual operations?
All virtual operations you have made will be saved to the scheduler. No operations will be
Task name: Scheduled Task
Please specify how and when would you like to perform the task:
Daily
Do not reboot if it is required
Shutdown system after carrying out the tasks
Start the task on: 10/13/2013 at 12:00 AM
Every 1 day(s)
Do not run the task after: 10/13/2013
Specify user name and password.
Discard all operations on close
Yes
No

4. In the opened dialog enter the required task name and specify the task timetable;
5. The operation will be performed immediately after confirmation.

This command is unavailable if there are no operations on the List of Pending Operations.

Scripting

The program actions can also be represented in form of a script. The script describes the appropriate operation with macro-language commands. There is an interpreter utility - SCRIPTS.exe, which is included in the program installation package. This utility works in the unattended mode, which enables to automate operations.

Startup

You have no need to write a script since the program has a convenient interface for such a task. In order to generate a script on the base of the entered parameters of the required operation, you should take the following steps:

1. Make sure the virtual mode of execution is enabled;
2. Carry out with the program all operations you need to be scripted;
3. Call the Generate Script dialog by clicking its icon on the Virtual Operations Bar.

Setup

Initially the program suggests some consistent values for all parameters. In most cases, you can just press the Generate button to confirm the operation.

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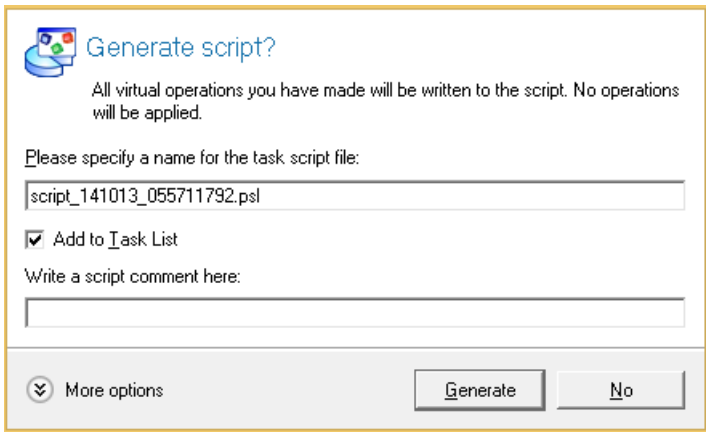
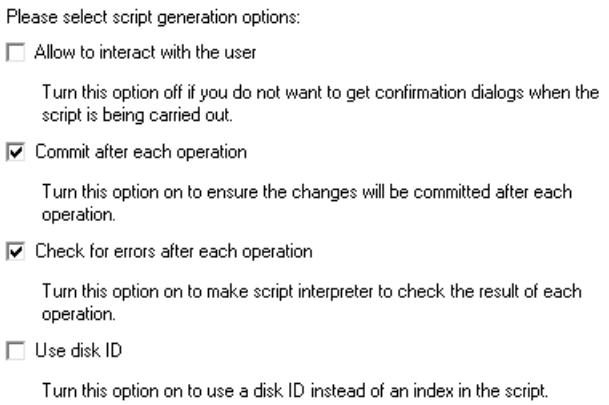

Generate script?
All virtual operations you have made will be written to the script. No operations will be applied.
Please specify a name for the task script file:
script_141013_055711792.psl
Add to Task List
Write a script comment here:
More options
Generate
No

- **Script file name and location**. By default, the program offers to add the script to the Task List with a name containing its creation date and time. Unmark the Add to Task List checkbox to define an exact location and a filename for the script file. The default file extension that is reserved for scripting files is .psl, which however can be modified.
- **Add to Task List**. By default, the script will be automatically added to corresponding list. If necessary, add a small comment to it.

In addition, there is the possibility to make further detailed settings (although the default values will do in most cases). To activate the advance mode, you need to click the More options button at the foot of the dialog page, so you will be able to define:


Please select script generation options:
Allow to interact with the user
Turn this option off if you do not want to get confirmation dialogs when the script is being carried out.
Commit after each operation
Turn this option on to ensure the changes will be committed after each operation.
Check for errors after each operation
Turn this option on to make script interpreter to check the result of each operation.
Use disk ID
Turn this option on to use a disk ID instead of an index in the script.

- **Interaction with the user**. Mark the option to pause the script interpreter during the execution to prompt the user's confirmation or other input. Otherwise the program will not stop using default values for parameters if needed.
- **Commit after each operation**. Mark the option to commit changes after each operation.
- **Check for errors after each operation**. Mark the option to insert a special code in script, which checks the status of the last executed operation and stops the script processing if there are errors of any kind.
- **Discard all operations on close**. Mark the option to empty the List of Pending Operations after generating the script.

Result

After the operation is completed you receive a new script file. It is placed into the specified destination, its features defined in the dialog.

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This command is unavailable if there are no operations on the List of Pending Operations.

To learn more about scripts please consult the Paragon Scripting Language manual.

Extra Functionality

This chapter describes the supplementary functionality available in the program.

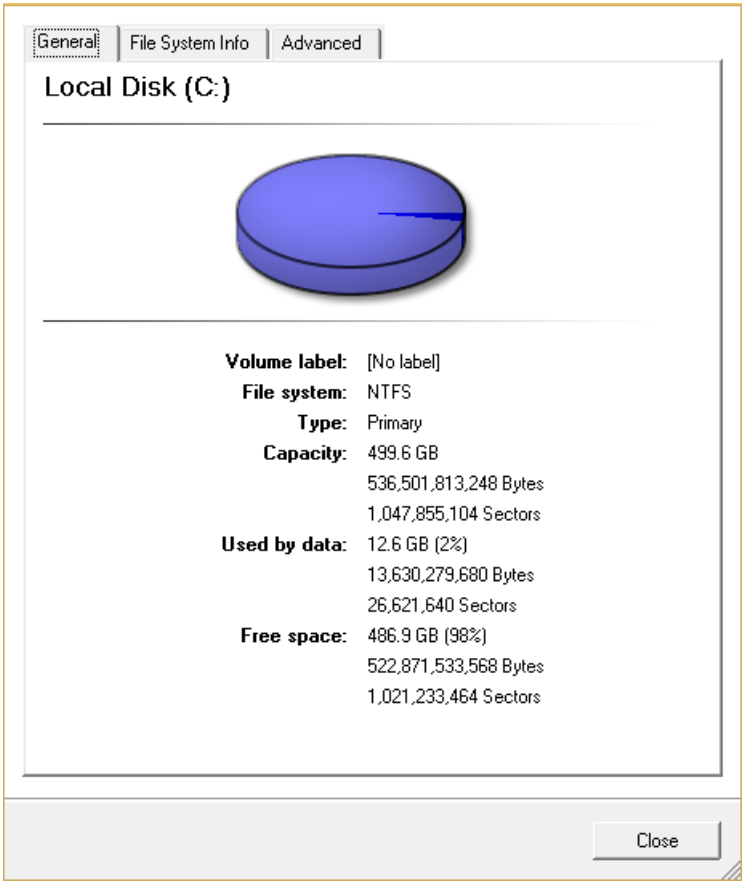
View Partition/Hard Disk Properties

The program enables to obtain in-depth information on the properties of hard disks and partitions. Besides the general information, such as capacity, used space or file system type it provides the possibility to get info on hard disk geometry, cluster size, exact partition location, etc.

To get properties on a partition/hard disk, please do the following:

1. Choose a partition/hard disk on the Disk Map.
2. Call a context menu for the selected object by the right mouse click, then select **Properties…**

There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.



In the opened dialog information will be grouped according to its properties, thus by clicking tabs you can get information you need.

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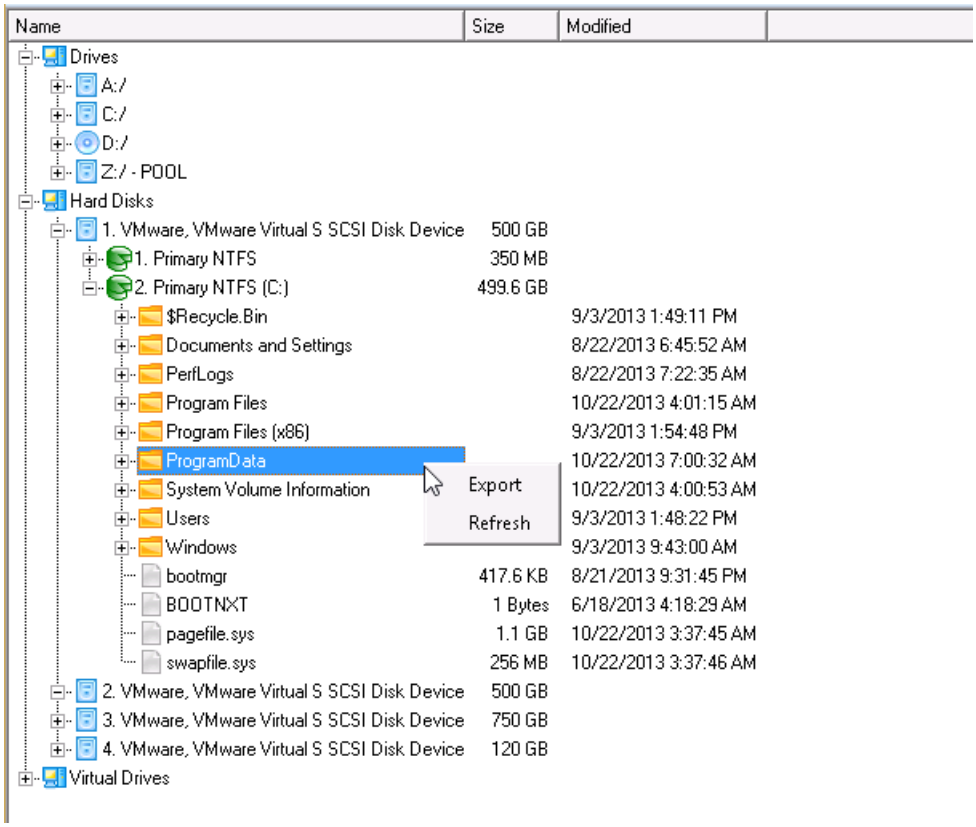
Volume Explorer

Volume Explorer is a special tool to browse and export contents of the local mounted/unmounted volumes formatted to FAT16, FAT32, NTFS, Ext2FS, Ext3FS, Ext4FS, reFS file systems. Besides it enables to access Paragon backups as regular folders to explorer their contents or to retrieve certain files.

Click the **Volume Explorer** tab on the Ribbon Panel to open it:


Name
Size
Modified
Drives
A:/
C:/
D:/
Z:/ - POOL
Hard Disks
1. VMware, VMware Virtual S SCSI Disk Device 500 GB
1. Primary NTFS 350 MB
2. Primary NTFS (C:) 499.6 GB
$Recycle.Bin 9/3/2013 1:49:11 PM
Documents and Settings 8/22/2013 6:45:52 AM
PerfLogs 8/22/2013 7:22:35 AM
Program Files 10/22/2013 4:01:15 AM
Program Files (x86) 9/3/2013 1:54:48 PM
ProgramData 10/22/2013 7:00:32 AM
System Volume Information 10/22/2013 4:00:53 AM
Users 9/3/2013 1:48:22 PM
Windows 9/3/2013 9:43:00 AM
bootmgr 417.6 KB 8/21/2013 9:31:45 PM
BOOTNXT 1 Bytes 6/18/2013 4:18:29 AM
pagefile.sys 1.1 GB 10/22/2013 3:37:45 AM
swapfile.sys 256 MB 10/22/2013 3:37:46 AM
2. VMware, VMware Virtual S SCSI Disk Device 500 GB
3. VMware, VMware Virtual S SCSI Disk Device 750 GB
4. VMware, VMware Virtual S SCSI Disk Device 120 GB
Virtual Drives
Export
Refresh

Call a context menu for the selected file/folder by the right mouse click to export it to some other location (local or network drive, etc.).

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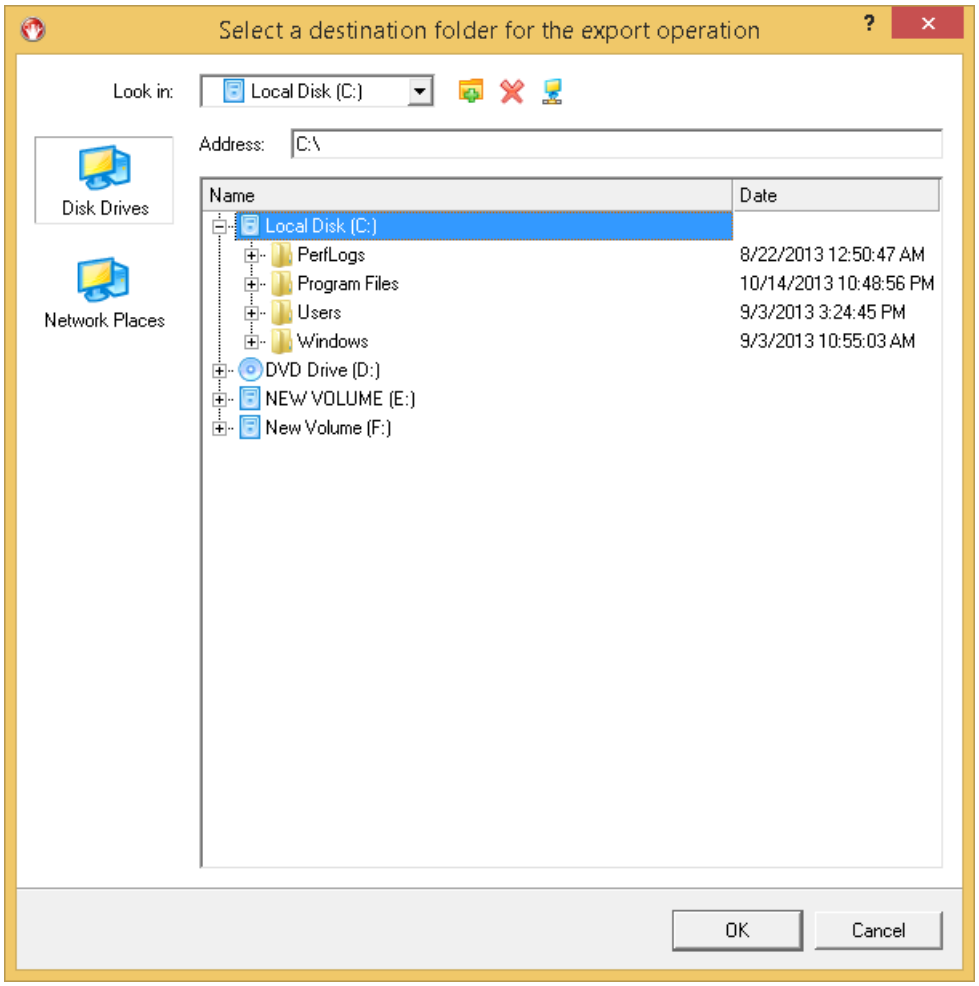

Available operation scenarios:

- Restoring separate files and folders from a backup

The current version of the program does not enable to access virtual containers and file archives with Volume Explorer.

File Transfer Wizard

File Transfer Wizard is designed to make such operations as copying of separate files/directories or burning of them to CD/DVD as easy and convenient as possible. It may be of particular use in case of a system malfunction, caused either by a virus attack or files corruption, in order to get the system back on track again. Besides it provides access to Paragon backups as regular folders to browse through their contents or copy required files.

Startup

- Click **Tool Button**, then select **File Transfer Wizard**.

There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.

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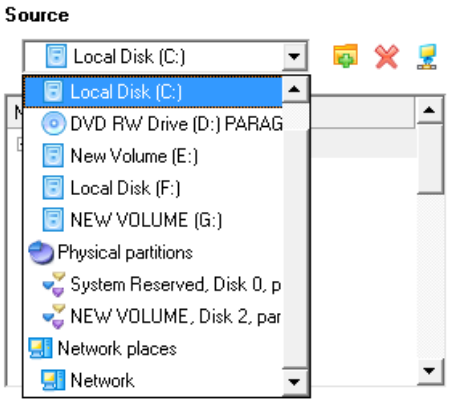
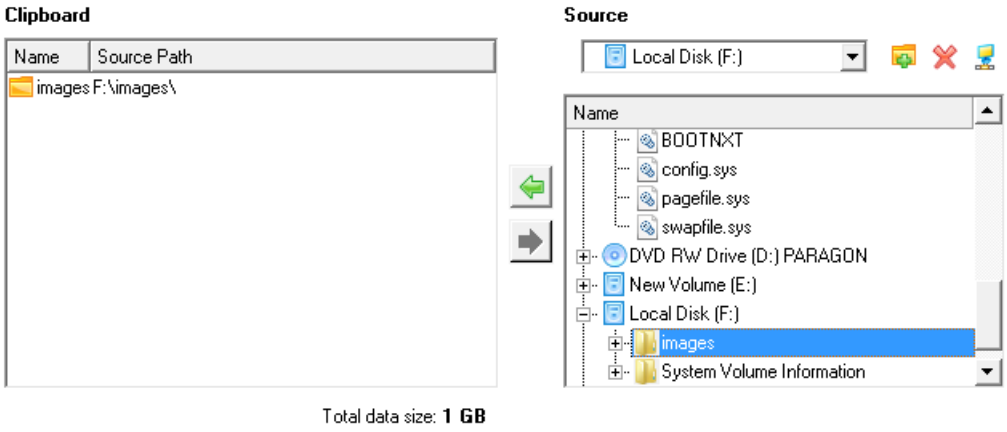
Setup

The wizard offers the following steps to accomplish the transfer operation:

- **Place to look for files/directories**. Select a source disk from the pull-down list in the left pane of the page. The program enables to process both mounted and unmounted (without drive letter assigned) partitions. Besides it is possible to map a network drive.

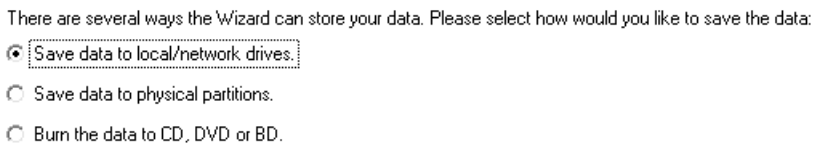


- **Object(s) of operation**. Choose files/directories you want to copy and place them to Clipboard by pressing the Add button. To delete a file/directory from the Clipboard, select it in the Clipboard pane and press the Remove button. You can also create a new folder, rename or irreversibly delete existing files/directories of the left pane by pressing the appropriate buttons.



Files/directories deleted from the Clipboard remain intact on source disks.

- **Destination to store the object(s)**. The File Transfer Wizard allows copying data to local or network drives, to physical partitions (without drive letters assigned), or burning them to CD/DVDs. Choose the way the data will be stored.


There are several ways the Wizard can store your data. Please select how would you like to save the data:
Save data to local/network drives.
Save data to physical partitions.
Burn the data to CD, DVD or BD.

- **Revision of changes**. The Transfer Summary page provides structurally divided information on all the actions made in the wizard. Check the changes and come back to any step of the wizard (if necessary) by following the required hyperlink.

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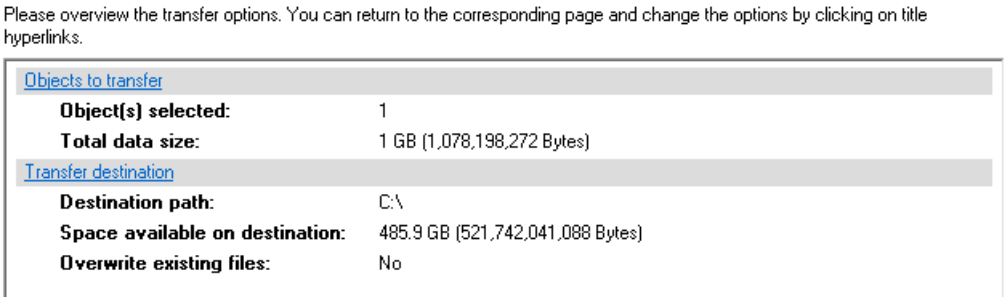

Please overview the transfer options. You can return to the corresponding page and change the options by clicking on title hyperlinks.
Objects to transfer
Object(s) selected: 1
Total data size: 1 GB (1,078,198,272 Bytes)
Transfer destination
Destination path: C:\
Space available on destination: 485.9 GB (521,742,041,088 Bytes)
Overwrite existing files: No

Result

After the operation is completed the required data will be placed into the specified destination.

Available operation scenarios:

- Copying of data from the corrupted system disk to another hard disk
- Burning of data from the corrupted system disk to CD/DVD
- Copying of data from a backup to the corrupted system partition
- Restoring separate files and folders from a backup

Mount Partition

The program enables to assign or remove drive letters of existing formatted partitions.

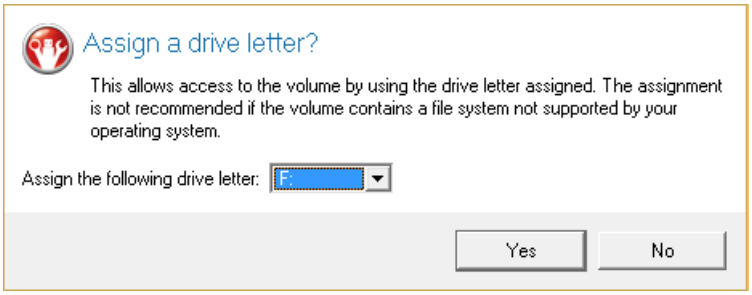
Assign Drive Letter

In order to mount a partition you should take the following steps:

1. Select a partition on the Disk Map.
2. Call a context menu for the selected object by the right mouse click, then select **Assign Drive Letter…**

There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.

3. Specify a drive letter for the selected partition. Initially the program suggests some consistent value for this parameter. So you may just press the Yes button to confirm the operation.


Assign a drive letter?
This allows access to the volume by using the drive letter assigned. The assignment is not recommended if the volume contains a file system not supported by your operating system.
Assign the following drive letter: F:
Yes
No

However you can manually define the required letter by selecting it from the pull-down list of available drive letters.

4. The operation will be performed immediately after confirmation.

Remove Drive Letter

In order to un-mount a partition you should take the following steps:

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1. Select a partition on the Disk Map.
2. Call a context menu for the selected object by the right mouse click, then select **Remove Drive Letter**.

There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.

3. The operation will be performed immediately after confirmation.

Modifying drive letter of the system partition will result in inability to boot the operating system.

After having processed partitions with installed software, some programs may not run properly.

Mount Archive

The program provides the ability to assign a drive letter to a partition backup image. As a result of the operation you will get a new read-only partition in the system to easily browse through its contents and copy the required information even with the standard Windows tools.

Assign Drive Letter

Before you start mounting backup images, please study the following limitations:

- Archives can be mounted at the partition-level only, thus please use the 'Show partitions' option to view all partitions inside backup images;
- Archives will only be mounted for the current session and won't be available after the system restart;
- Archives containing Windows Storage Spaces are not supported;
- Archives containing ReFS partitions are not supported;
- pVHD archives located on physical (unmounted) partitions or in the backup capsule cannot be mounted;
- pVHD LVM/LDM archives are not supported.

In order to mount an archive you should take the following steps:

1. Select a backup image in the Archive Database.
2. Call a context menu for the selected object by the right mouse click, then select **Mount the Selected Archive**.

There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.

3. Specify a drive letter for the selected backup image. Initially the program suggests some consistent value for this parameter. So you may just press the Yes button to confirm the operation.

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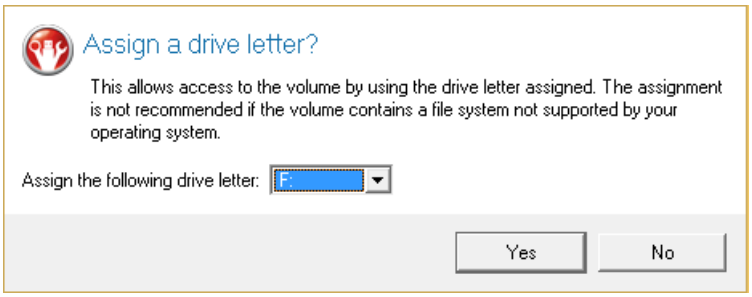

Assign a drive letter?
This allows access to the volume by using the drive letter assigned. The assignment is not recommended if the volume contains a file system not supported by your operating system.
Assign the following drive letter:
F:
Yes
No

However you can manually define the required letter by selecting it from the pull-down list of available drive letters.

4. The operation will be performed immediately after confirmation.

It is strongly recommended not to un-mount backup images with Windows Disk Manager or other third side software.

Remove Drive Letter

In order to un-mount a backup image you should take the following steps:

1. Select a backup image in the Archive Database.
2. Call a context menu for the selected object by the right mouse click, then select **Unmount the Selected Archive**.

There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.

3. The operation will be performed immediately after confirmation.

Test Surface

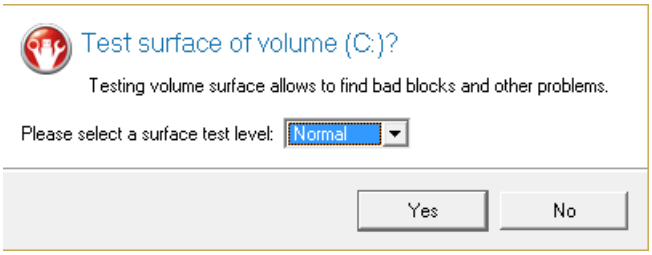
The program enables to test surface of existing partitions and blocks of free space for bad or unstable sectors. If found any it automatically marks them unusable in the file system metadata, thus minimizing the risk of data loss.

In order to start the surface test you should take the following steps:

1. Select a partition or a block of free space on the Disk Map.
2. Call a context menu for the selected object by the right mouse click, then select **Test Surface…**

There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.

3. From the pull-down list choose the level of the surface check.


Test surface of volume (C:)?
Testing volume surface allows to find bad blocks and other problems.
Please select a surface test level:
Normal
Yes
No

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4. The operation will be performed immediately after confirmation.

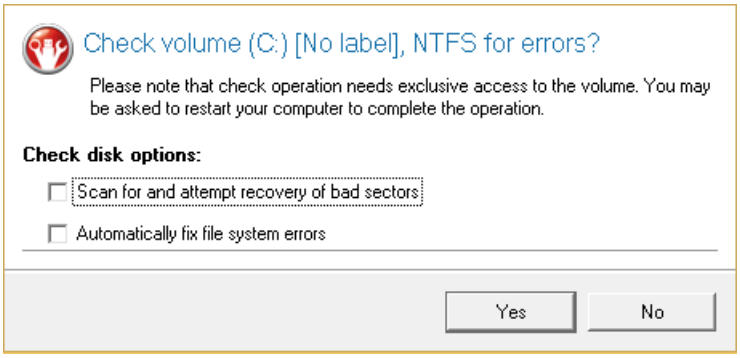
Check File System Integrity

The program allows you to check integrity of a file system. It can be used to detect possible file system errors before performing any operation on a partition.

To start the system integrity check you should take the following steps:

1. Select a partition on the Disk Map.
2. Call a context menu for the selected object by the right mouse click, then select **Check File System Integrity**

There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.


Check volume (C:) [No label], NTFS for errors?
Please note that check operation needs exclusive access to the volume. You may be asked to restart your computer to complete the operation.
Check disk options:
Scan for and attempt recovery of bad sectors
Automatically fix file system errors
Yes
No

3. The operation will be performed immediately after confirmation.

Check Archive Integrity

The program provides the ability to check integrity of backup images. The function allows distinguishing between valid and corrupted images before using them. There are two wizards in the program, one for checking PBF images and one – for virtual containers (pVHD, VHD, VHDX, VMDK). The work algorithm of both wizards is very similar.

Startup

For PBF images

- Click the **Backup & Restore** tab on the Ribbon Panel, then select **Check Archive Integrity**.

For virtual containers

- Click the **New Backup Format** tab on the Ribbon Panel, then select **Check VD Integrity**.

There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.

Setup

The wizard offers the following steps to accomplish the operation:

For PBF images

- **An archive to verify**. The Browse for Archive page enables to find a backup image you need.

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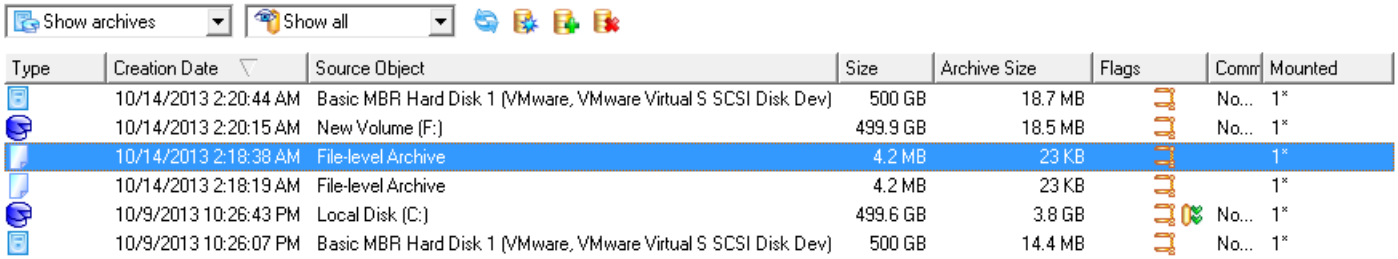
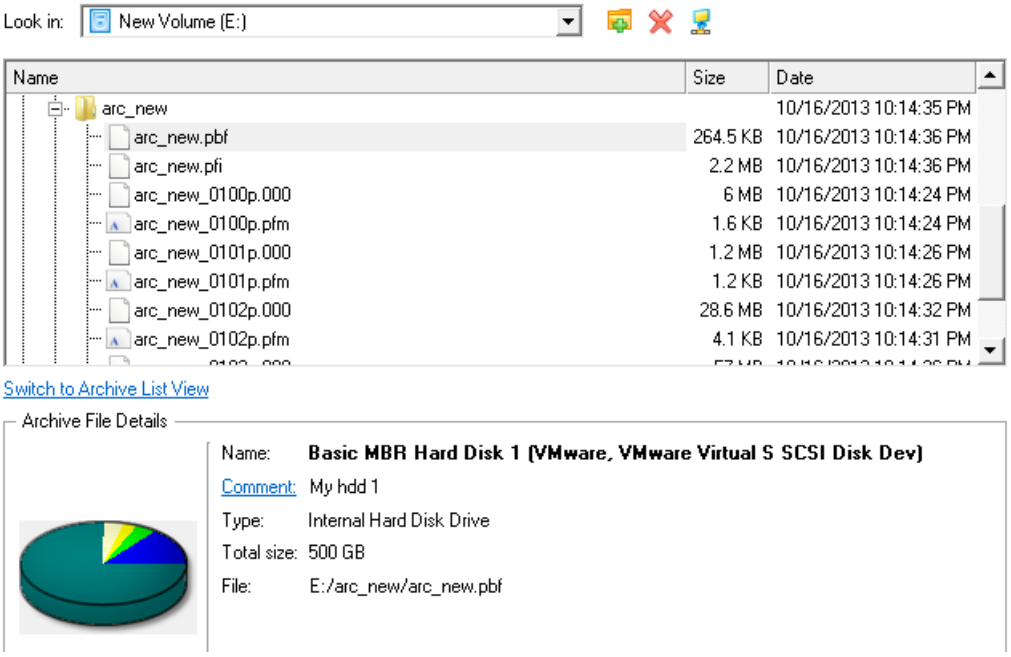
By clicking the Switch to Archive List View link, you can see a list of images contained in the Archive Database (if any).


Show archives
Show all
Type
Creation Date
Source Object
Size
Archive Size
Flags
Comm
Mounted
10/14/2013 2:20:44 AM Basic MBR Hard Disk 1 (VMware, VMware Virtual S SCSI Disk Dev) 500 GB 18.7 MB No... 1*
10/14/2013 2:20:15 AM New Volume (F:) 499.9 GB 18.5 MB No... 1*
10/14/2013 2:18:38 AM File-level Archive 4.2 MB 23 KB 1*
10/14/2013 2:18:19 AM File-level Archive 4.2 MB 23 KB 1*
10/9/2013 10:26:43 PM Local Disk (C:) 499.6 GB 3.8 GB No... 1*
10/9/2013 10:26:07 PM Basic MBR Hard Disk 1 (VMware, VMware Virtual S SCSI Disk Dev) 500 GB 14.4 MB No... 1*

To get a clear-cut picture on properties of the required image, just click on it and the section below will (i.e. Archive File Details) display a short description.

To know more on the subject, please consult the Viewing Image Properties chapter.

By clicking the Switch to File View link, you can find the required image in the browser-like window. The section below (i.e. Archive File Details) will also display a short description of the selected image.


Look in: New Volume (E:)
Name
Size
Date
arc_new 10/16/2013 10:14:35 PM
arc_new.pbf 264.5 KB 10/16/2013 10:14:36 PM
arc_new.pfi 2.2 MB 10/16/2013 10:14:36 PM
arc_new_0100p.000 6 MB 10/16/2013 10:14:24 PM
arc_new_0100p.pfm 1.6 KB 10/16/2013 10:14:24 PM
arc_new_0101p.000 1.2 MB 10/16/2013 10:14:26 PM
arc_new_0101p.pfm 1.2 KB 10/16/2013 10:14:26 PM
arc_new_0102p.000 28.6 MB 10/16/2013 10:14:32 PM
arc_new_0102p.pfm 4.1 KB 10/16/2013 10:14:31 PM
Switch to Archive List View
Archive File Details
Name: Basic MBR Hard Disk 1 (VMware, VMware Virtual S SCSI Disk Dev)
Comment: My hdd 1
Type: Internal Hard Disk Drive
Total size: 500 GB
File: E:/arc_new/arc_new.pbf

Moreover, on this page you've got the possibility to create new folders, delete existing files/folders or map network drives by clicking the appropriate buttons.

To know more on the subject, please consult the Viewing Image Properties chapter.

For virtual containers

- **An archive to verify**. The Browse for Archive page enables to find a backup image you need.

  By clicking the Switch to Archive List View link, you can see a list of images contained in the Archive Database (if any).

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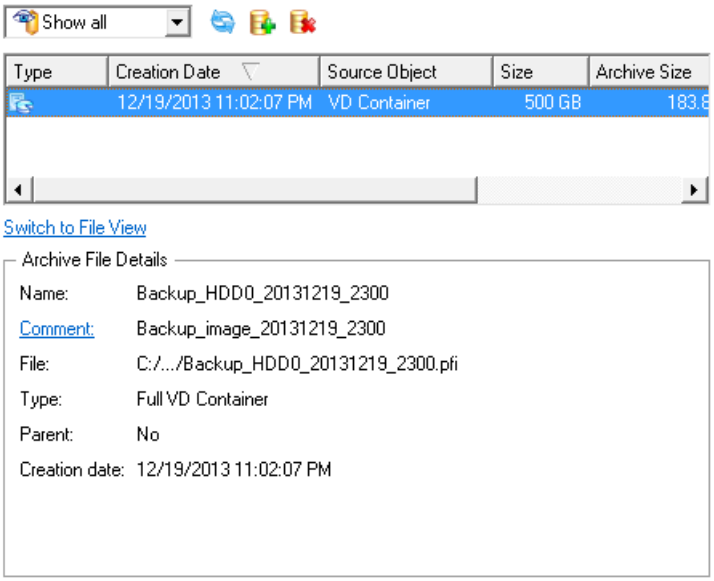
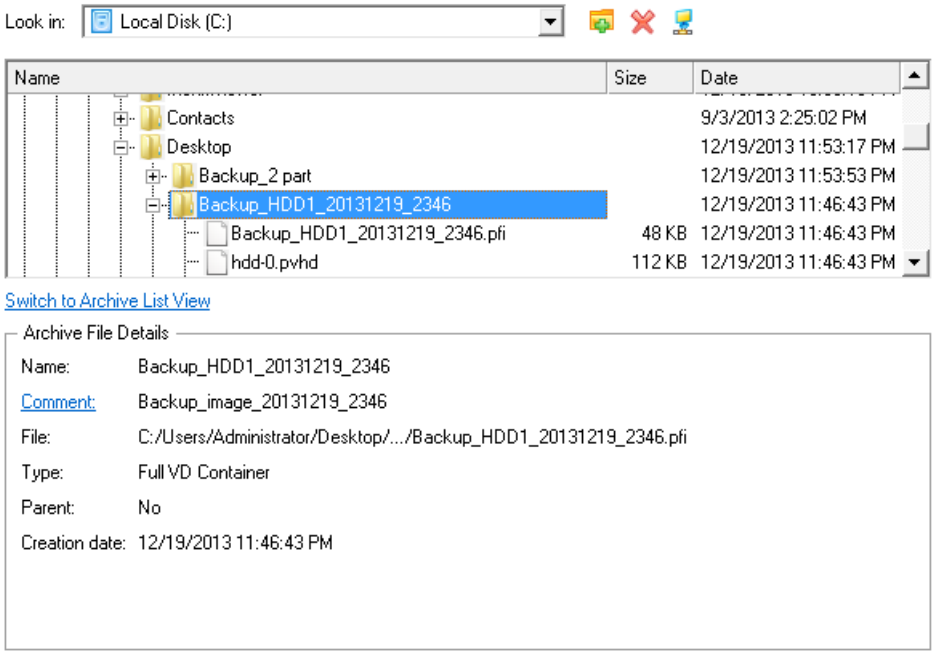


To get a clear-cut picture on properties of the required image, just click on it and the section below will (i.e. Archive File Details) display a short description.

To know more on the subject, please consult the Viewing Image Properties chapter.

By clicking the Switch to File View link, you can find the required image in the browser-like window. The section below (i.e. Archive File Details) will also display a short description of the selected image.



Moreover, on this page you've got the possibility to create new folders, delete existing files/folders or map network drives by clicking the appropriate buttons.

To know more on the subject, please consult the Viewing Image Properties chapter.

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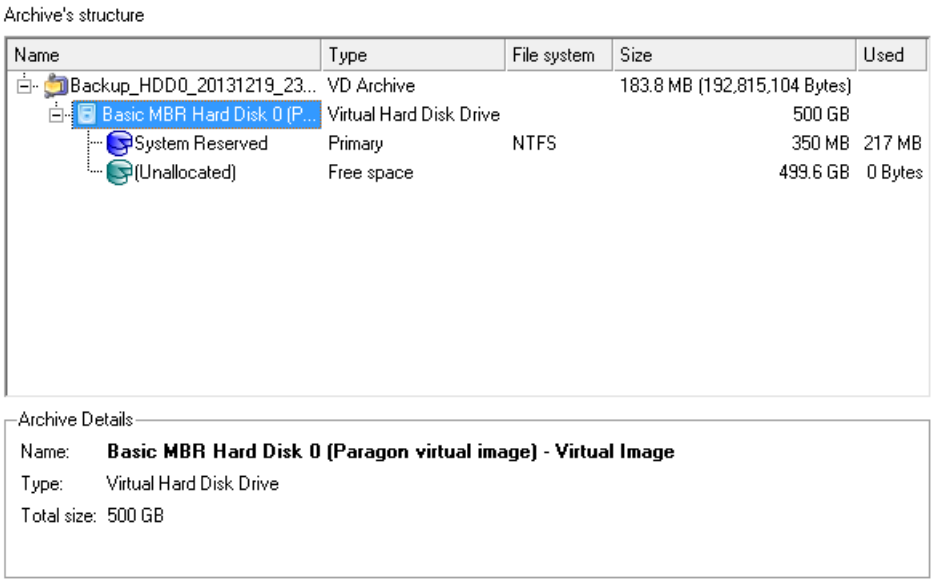
- **Revision of archive's structure**. By clicking **Next** for the selected virtual container you can see its properties in a bright graphical form. To initiate verification, please click **Next** one more time.



Result

After the operation is completed you can see results of the check.

Check Recovery Discs

You've got the ability to check whether backup media created with the program is 100 percent error-free and ready to use. The Check Recovery Disc Wizard will help you do that.

This function is not available for a 32-bit version of the program.

Startup

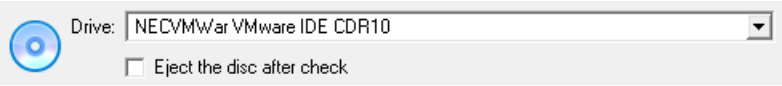
- Click **Tool Button**, then select **Check Recovery Discs…**

There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.

Startup

The wizard offers the following steps to accomplish the operation:

- **CD/DVD drive**. Select from the pull-down list of available CD/DVD devices the required drive to use during the operation.



- Set whether to eject the disk after the operation is completed or not.

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Result

After the operation is completed you can see results of the check.

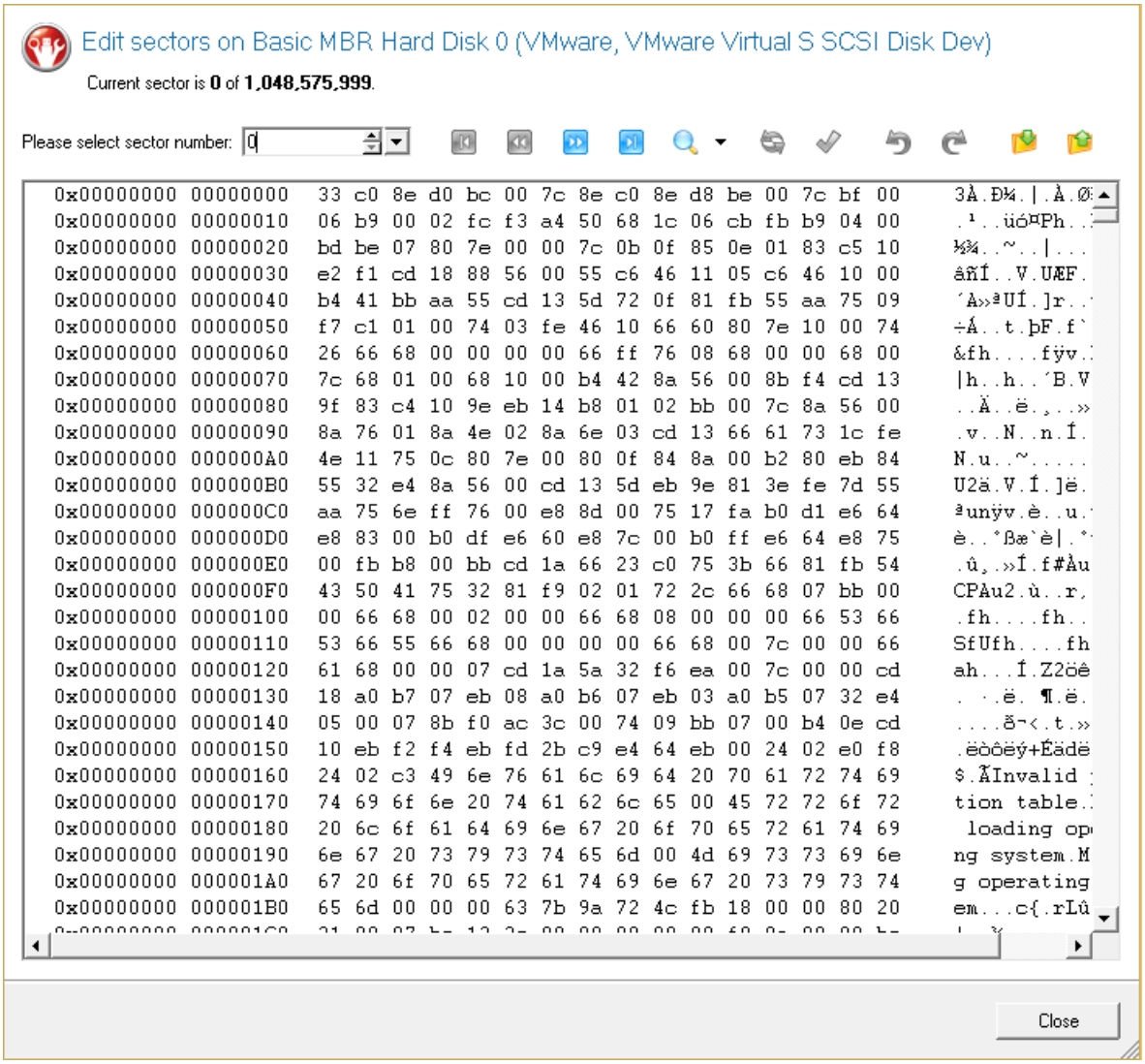
Edit/View Sectors

With the built-in Edit/View Sectors tool the program enables to view/edit sectors on existing partitions/hard disks providing the possibility to directly access and modify sectors, save and restore sectors from specified files, navigate through the system metadata, etc.

In order to edit/view sectors of a hard disk/partition you should take the following steps:

1. Select a hard disk/partition on the Disk Map.
2. Call a context menu for the selected object by the right mouse click, then select **Edit/View Sectors**.

There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.



Careless use of the Edit Sectors function may result in the irreversible data corruption.

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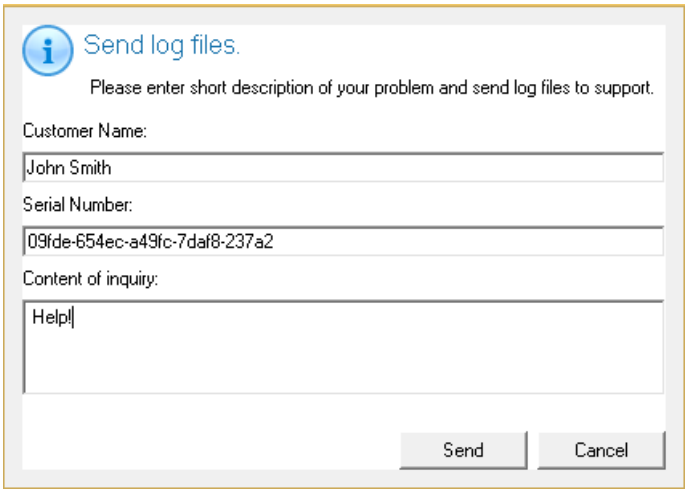
Send Log Files

The program enables to simplify the procedure of sending support requests to the Paragon Support Team. In case of having difficulties with handling the program, you, with the help of this very function, can address the company support engineers and provide them with all the information they need such as the disk layout, performed operations, etc. in order to tackle the encountered problem. Information of that kind is stored in Log files.

In order to send log files to the Paragon Support Team you should take the following steps:

1. Click **Tool Button**, then select **Send Log Files**;
2. Provide a customer name and a product serial number;
3. Give a detailed description on the encountered problem.



By clicking the Send button the built-in mail client will generate a template request with attached compressed log files and then send it to the Paragon Support Team.

Log files do not contain any confidential information on the operating system settings or the user documents.

The Send Log Files function is only available when outgoing mail server (SMTP) and the user e-mail address are properly set. To learn more about it please consult the Settings Overview chapter.

View Logs

With a handy dialog you can study logs on any operation carried by the program. To make this job as easy as possible, all the information is structurally divided, besides there is the possibility to see the disk layout before and after an operation, what is very convenient.

In order to view logs on carried out operations, click **Tool Button**, then select **View Log Files**.

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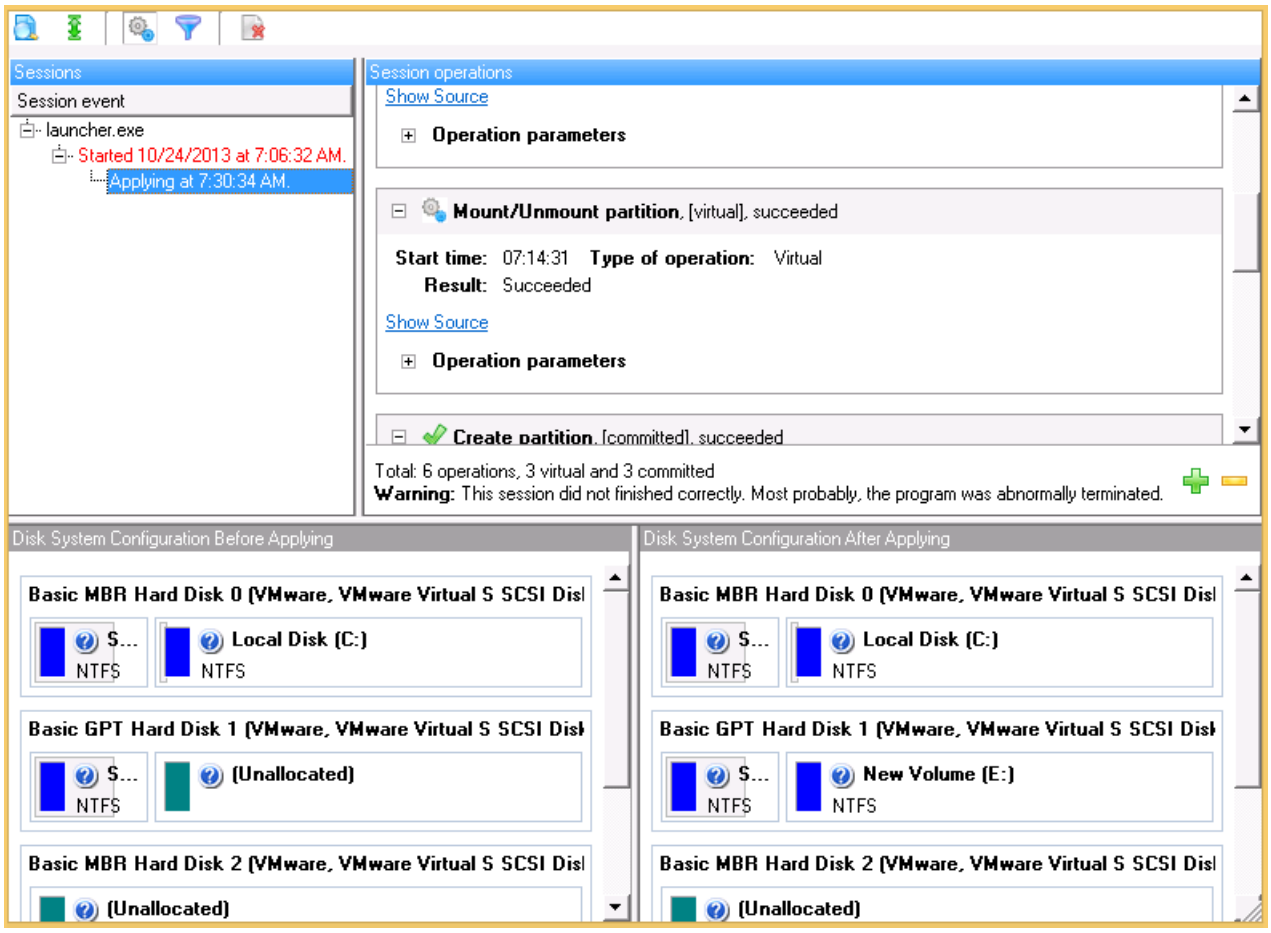

Typical Scenarios

This chapter lists a number of the most frequently used scenarios that may be accomplished with the program. You can find here useful recommendations and descriptions of operations.

Backup Scenarios

Creating the Backup Capsule

1. Click the **Backup & Restore** tab on the Ribbon Panel, then select **Manage Capsule**.
2. On the Wizard's Welcome page, click the Next button.
3. Select a place on the disk where the backup capsule will be created. It can be created as a primary partition or as a logical drive within an extended partition. It can be inserted into any place on the hard disk: at the end (preferable), at the beginning or somewhere in the middle between other partitions.

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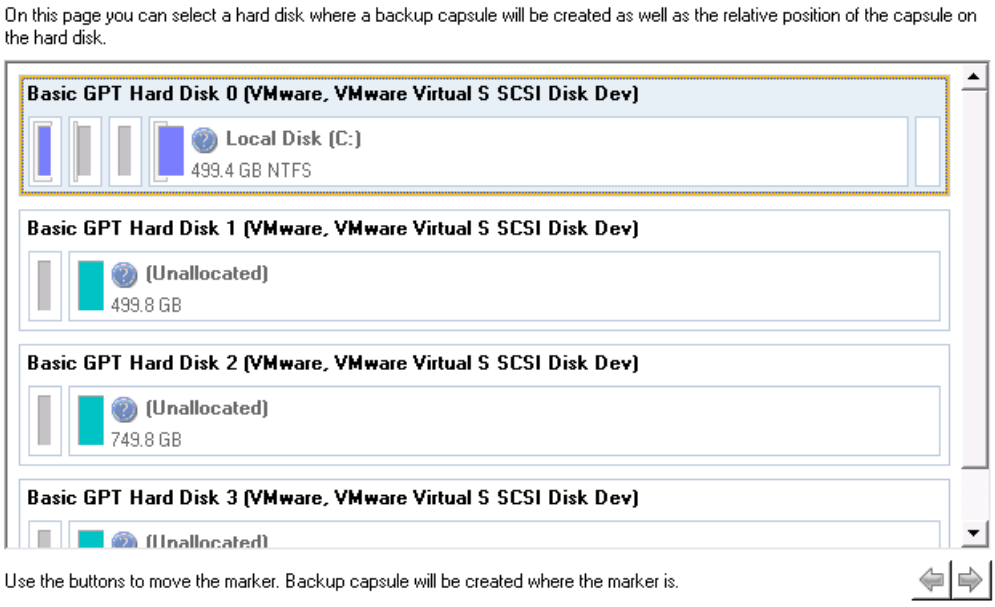
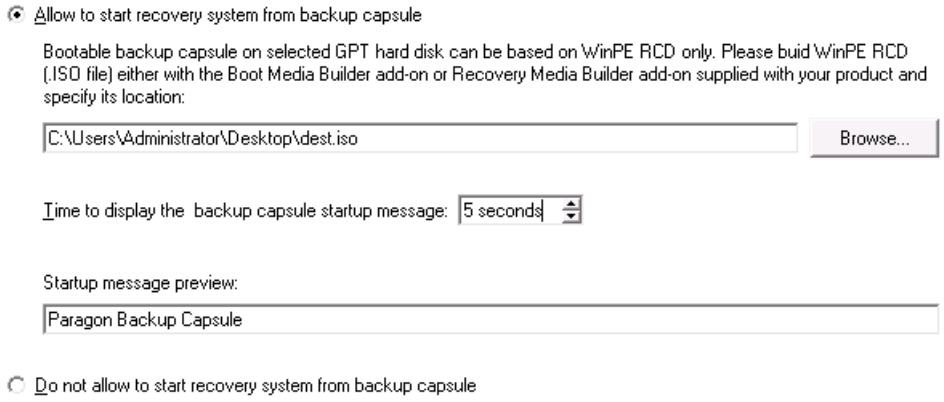

On this page you can select a hard disk where a backup capsule will be created as well as the relative position of the capsule on the hard disk.
Basic GPT Hard Disk 0 (VMware, VMware Virtual S SCSI Disk Dev)
Local Disk (C:)
499.4 GB NTFS
Basic GPT Hard Disk 1 (VMware, VMware Virtual S SCSI Disk Dev)
(Unallocated)
499.8 GB
Basic GPT Hard Disk 2 (VMware, VMware Virtual S SCSI Disk Dev)
(Unallocated)
749.8 GB
Basic GPT Hard Disk 3 (VMware, VMware Virtual S SCSI Disk Dev)
Use the buttons to move the marker. Backup capsule will be created where the marker is.

By default, the program allows the user to create the backup capsule only as the last primary or as the last logical drive within the extended partition. However, by activating the advance mode on the first page of the wizard you can remove this restriction that in its turn might result in some boot problems.

4. Activate the bootable recovery environment if needed. With its help you will get the choice to boot directly from the backup capsule for maintenance or recovery purposes every time you start up the computer.

   If you're attempting to embed our bootable environment to a GPT disk (just our case), you will be prompted to provide a path to an .ISO image of the WinPE recovery environment, which can be prepared with Paragon's Recovery Media Builder. If you have to do with an MBR disk, no preliminary actions are required, as in this case there will be used a Linux-based image, which is included to the product by default.


Allow to start recovery system from backup capsule
Bootable backup capsule on selected GPT hard disk can be based on WinPE RCD only. Please buid WinPE RCD (.ISO file) either with the Boot Media Builder add-on or Recovery Media Builder add-on supplied with your product and specify its location:
C:\Users\Administrator\Desktop\dest.iso
Browse...
Time to display the backup capsule startup message:
5 seconds
Startup message preview:
Paragon Backup Capsule
Do not allow to start recovery system from backup capsule

Creation of the bootable backup capsule on an MBR disk will result in overwriting MBR, thus in case of having a third side boot manager, it will be removed. To avoid that you can save the current MBR with the help of the Edit/View Sectors tool.

The backup capsule can only be bootable if it is located on the bootable device.

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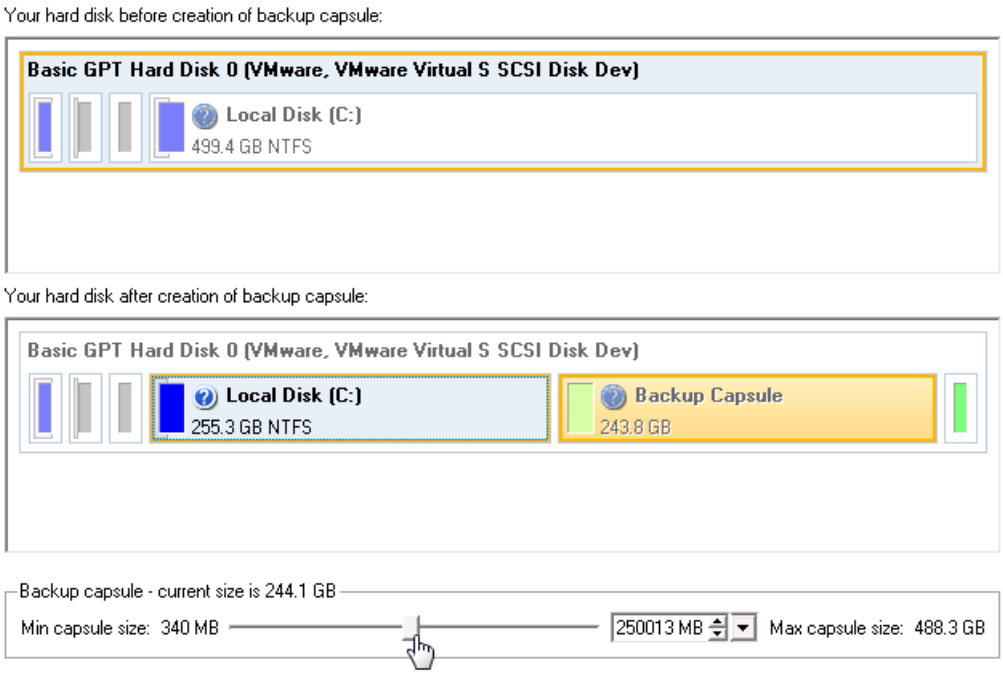
5. Preview the resulted hard disk layout and change size of the backup capsule if necessary by moving the corresponding slider or manually entering the required value. It will be created at the expense of free space of the selected disk.


Your hard disk before creation of backup capsule:
Basic GPT Hard Disk 0 (VMware, VMware Virtual S SCSI Disk Dev)
Local Disk (C:)
499.4 GB NTFS
Your hard disk after creation of backup capsule:
Basic GPT Hard Disk 0 (VMware, VMware Virtual S SCSI Disk Dev)
Local Disk (C:)
255.3 GB NTFS
Backup Capsule
243.8 GB
Backup capsule - current size is 244.1 GB
Min capsule size: 340 MB
250013 MB
Max capsule size: 488.3 GB

There is no restriction on the size of the backup capsule, merely depending on the available space of the hard disk and the capacity needed for the backup.

If the wizard cannot find enough free space in one block, it will redistribute free space, joining all free space blocks together into one united block and moving partitions if necessary. If the total amount of free space is still not enough, it is possible to split a fragment of space from one of the existing partitions, thus resizing it.

If the partition is locked and cannot be resized, the wizard makes the system reboot to create the backup capsule and automatically boots the system again. The rebooting mechanism is different for different versions of Windows.

6. Start the operation (by clicking the Next button) or return to correct the settings.

After the operation is completed you can place backup archives into the created backup capsule.

This operation can also be accomplished with our recovery media.

New Backup Format

Backing up hard disks or partitions to a network drive

To back up one or several hard disks or individual partitions and then place the resulted image to a network share, please do the following:

1. Click the **Backup & Restore** tab on the Ribbon Panel, then select **Backup to VD**.

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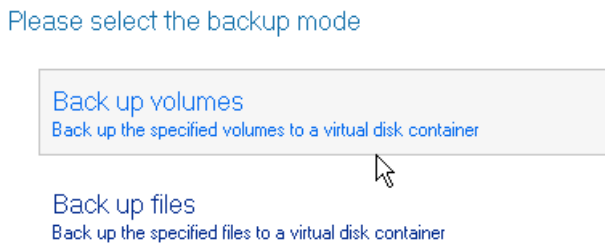
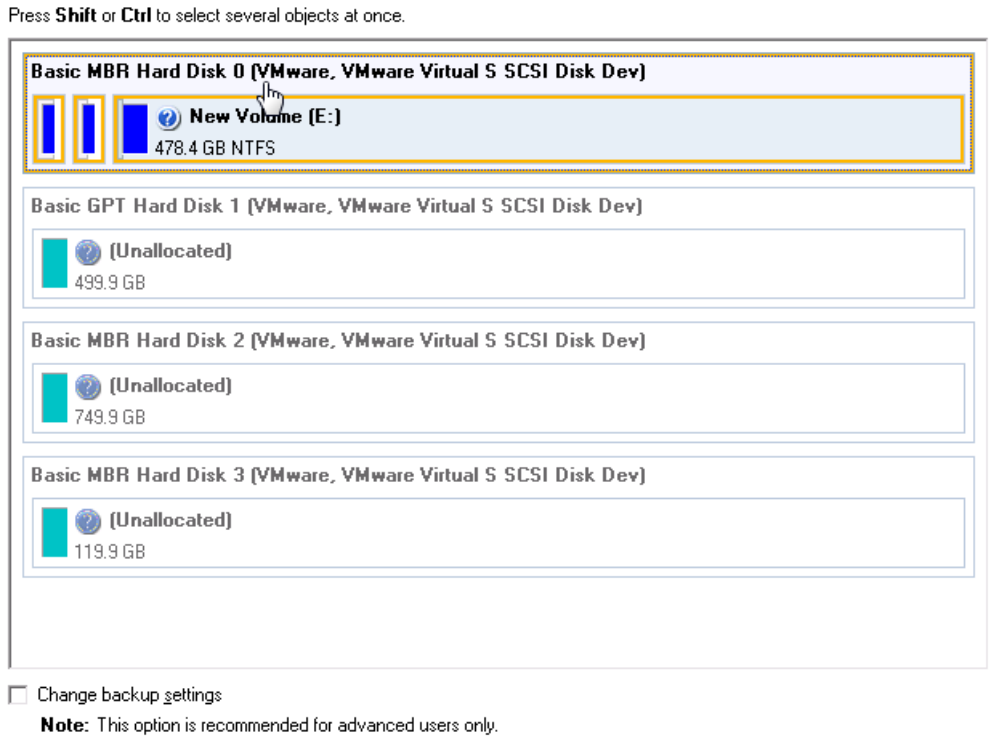
There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.

2. On the Wizard's Welcome page, click the Next button.
3. Select **Back up volumes** to create a sector-level virtual container.


Please select the backup mode
Back up volumes
Back up the specified volumes to a virtual disk container
Back up files
Back up the specified files to a virtual disk container

4. Select partitions or entire hard disks you'd like to back up by using **Shift** or **Ctrl** to select several objects at once. Click **Next** to proceed.


Press Shift or Ctrl to select several objects at once.
Basic MBR Hard Disk 0 (VMware, VMware Virtual S SCSI Disk Dev)
New Volume (E:)
478.4 GB NTFS
Basic GPT Hard Disk 1 (VMware, VMware Virtual S SCSI Disk Dev)
(Unallocated)
499.9 GB
Basic MBR Hard Disk 2 (VMware, VMware Virtual S SCSI Disk Dev)
(Unallocated)
749.9 GB
Basic MBR Hard Disk 3 (VMware, VMware Virtual S SCSI Disk Dev)
(Unallocated)
119.9 GB
Change backup settings
Note: This option is recommended for advanced users only.

By default the wizard is configured to back up to pVHD (Paragon Virtual Hard Drive). If you'd like to switch the resulted virtual container to VHD, VHDX, or VMDK, additionally mark the **Change backup settings** option. Apart from the desired virtual container type, you can modify other backup parameters. Please consult the Settings Overview section for more information.

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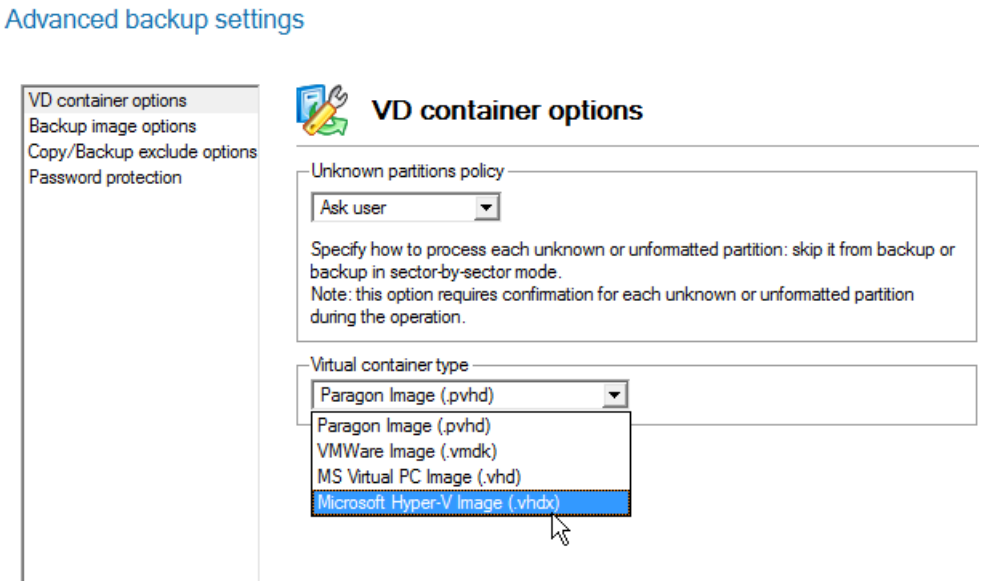
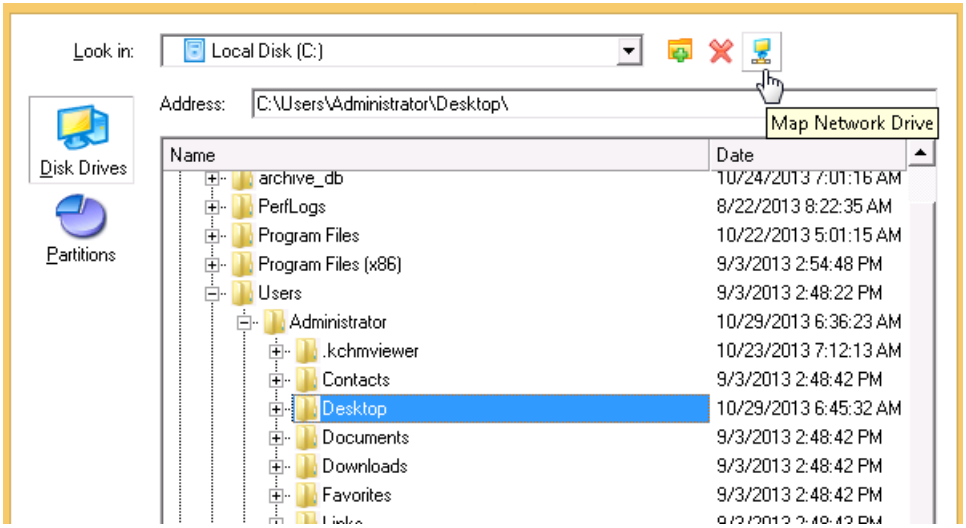

Advanced backup settings
VD container options
Backup image options
Copy/Backup exclude options
Password protection
VD container options
Unknown partitions policy
Ask user
Specify how to process each unknown or unformatted partition: skip it from backup or backup in sector-by-sector mode.
Note: this option requires confirmation for each unknown or unformatted partition during the operation.
Virtual container type
Paragon Image (.pvhd)
Paragon Image (.pvhd)
VMWare Image (.vmdk)
MS Virtual PC Image (.vhd)
Microsoft Hyper-V Image (.vhdx)

5. Specify location of the resulted image in the 'Backup destination' section. If you'd like to save it locally, either enter a full path to the target folder in the corresponding field or use the **Browse** button to find it.

If you're going to save the backup image on a network share, or a physical partition (a partition that doesn't have a drive letter in the system), click on the **Browse** button. In the opened dialog you can see several options:



- Select **Disk Drives** to use a local disk as backup destination;
- Select **Partitions** to use a physical partition as backup destination;
- Click on the **Map Network Drive** icon to map a network share to use it as backup destination (our case).

6. To map a network share, please do the following:

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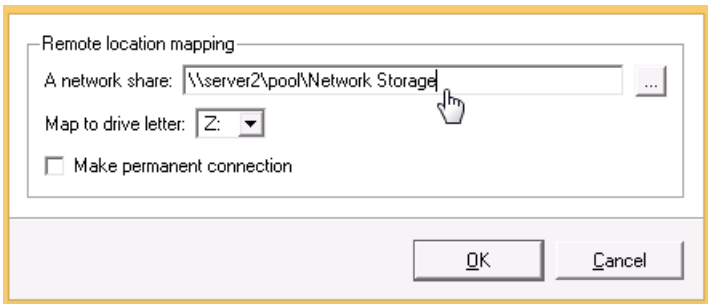
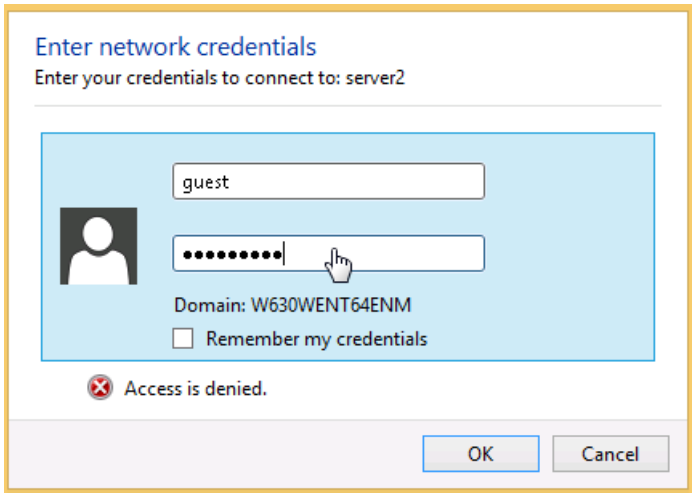
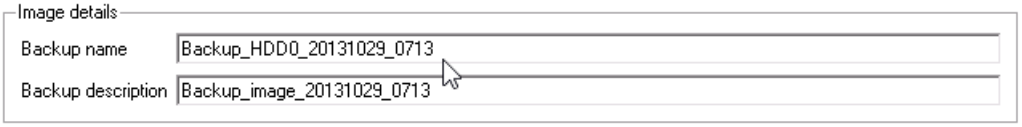


- Click the standard browse button [...] to browse for the required network share or manually enter a path to it;
- Define a letter from the pull-down list of available drive letters;
- Mark the checkbox to make this connection permanent. Otherwise it will only be available for the current Windows session;
- Specify a user name and password to access the selected network share if necessary.

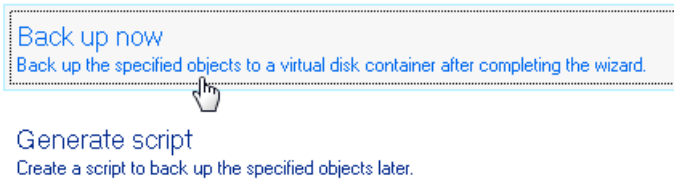


- Click **OK** when ready.

7. Edit the default archive name and description in the ‘Archive details’ section if necessary. Click **Next** to proceed.



8. Choose whether to execute the operation immediately after finishing the wizard and applying the pending changes (only if the virtual mode is enabled) or generate a script file to execute it later.


Back up now
Back up the specified objects to a virtual disk container after completing the wizard.
Generate script
Create a script to back up the specified objects later.

9. Click **Finish** to complete the wizard, then apply the pending changes.

This operation can also be accomplished with our recovery media.

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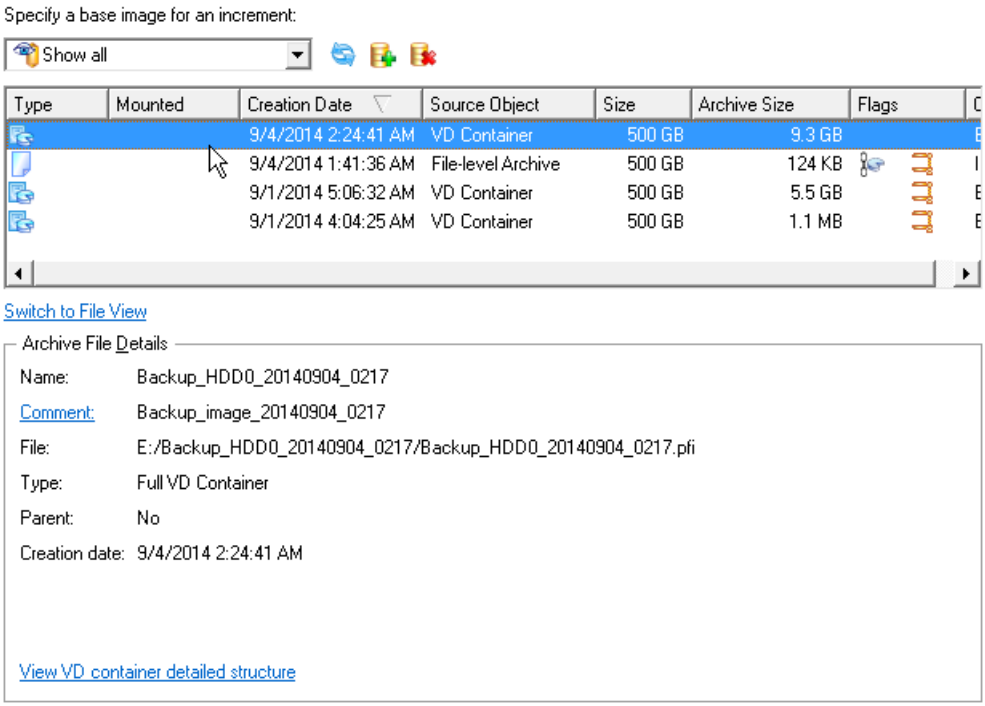
Creating an incremental update to a virtual container

You're allowed to do several incremental chains based on one full virtual container. If selecting a sector-level container, the wizard will generate a sector-level incremental image, if having to do with a file-level container – a file-level increment will be created.

To update a virtual container, please do the following:

1. Click the **Backup & Restore** tab on the Ribbon Panel, then select **Incremental Backup to VD**.
2. On the Wizard's Welcome page, click the Next button.
3. On the Browse for Archive page, specify the required full (base) virtual container:
   - By clicking the **Switch to Archive List View** link, you can see a list of images contained in the Archive Database (if any).



   To get a clear-cut picture on properties of the required image, just click on it and the section below will (i.e. Archive File Details) display a short description.

To know more on the subject, please consult the Viewing Image Properties chapter.

   - By clicking the **Switch to File View** link, you can find the required image in the browser-like window. The section below (i.e. Archive File Details) will also display a short description of the selected image.

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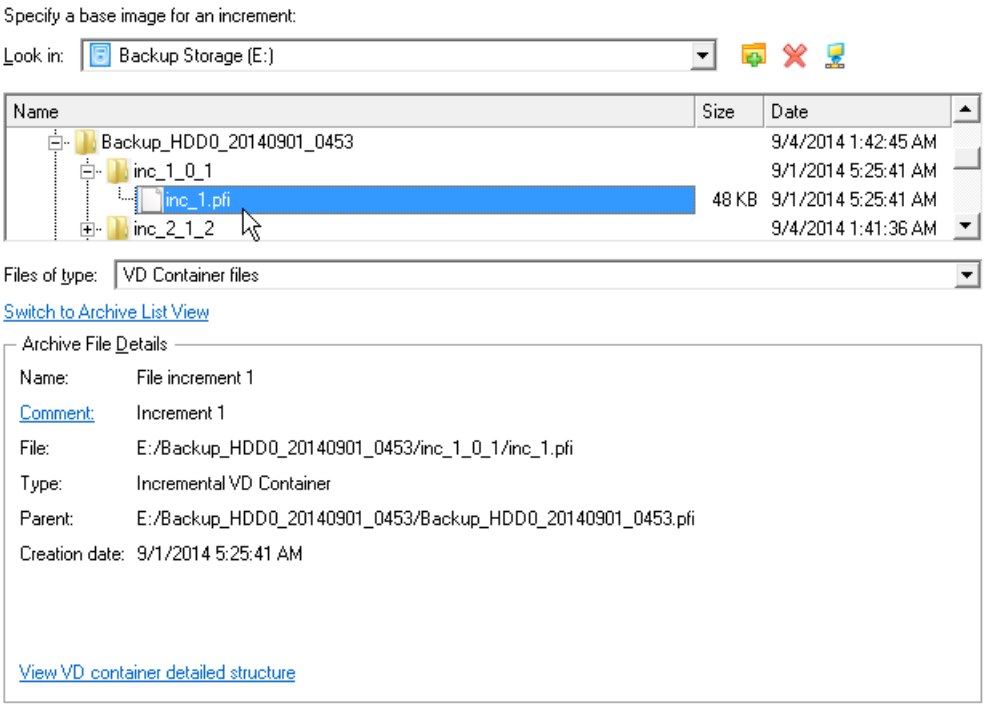
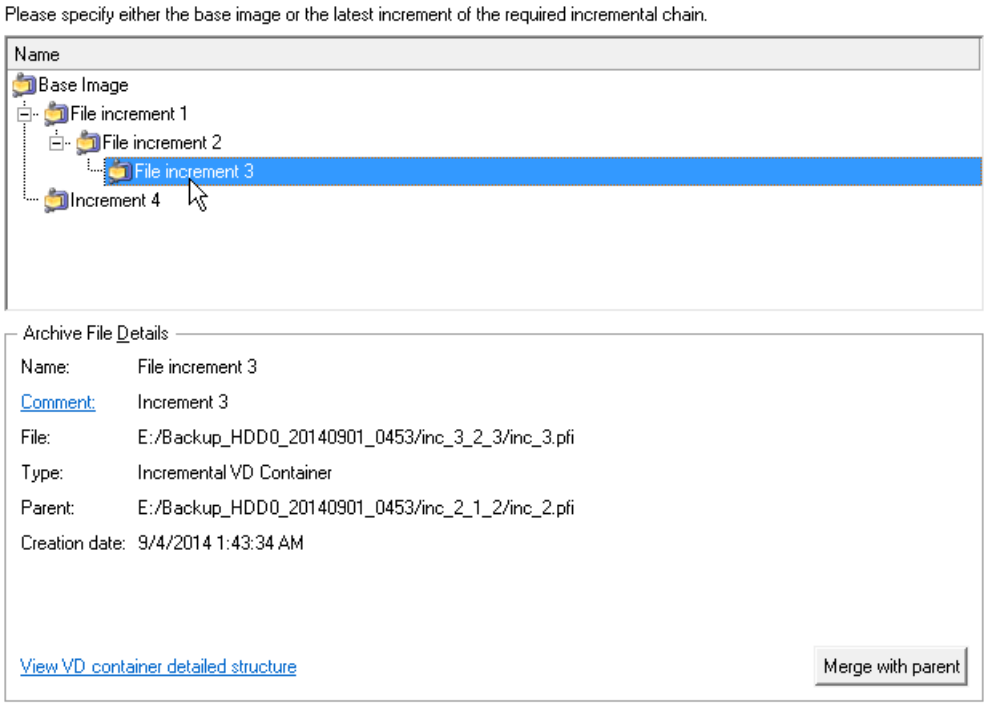


To know more on the subject, please consult the Viewing Image Properties chapter.

Our product enables to create several incremental chains to one base image, provided each chain contains changed data of a particular backup object(s). This option allows much flexibility in managing backup contents. In the wizard incremental chains will be automatically associated with their base image.



You're allowed to merge contents of the last increment in the chain with the previous one, thus updating its contents. To do that, please select the required last increment, click the **Merge with parent** button, then confirm the operation. The merge operation will be accomplished once you confirm it.

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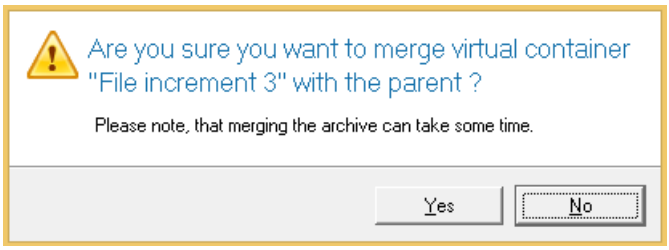
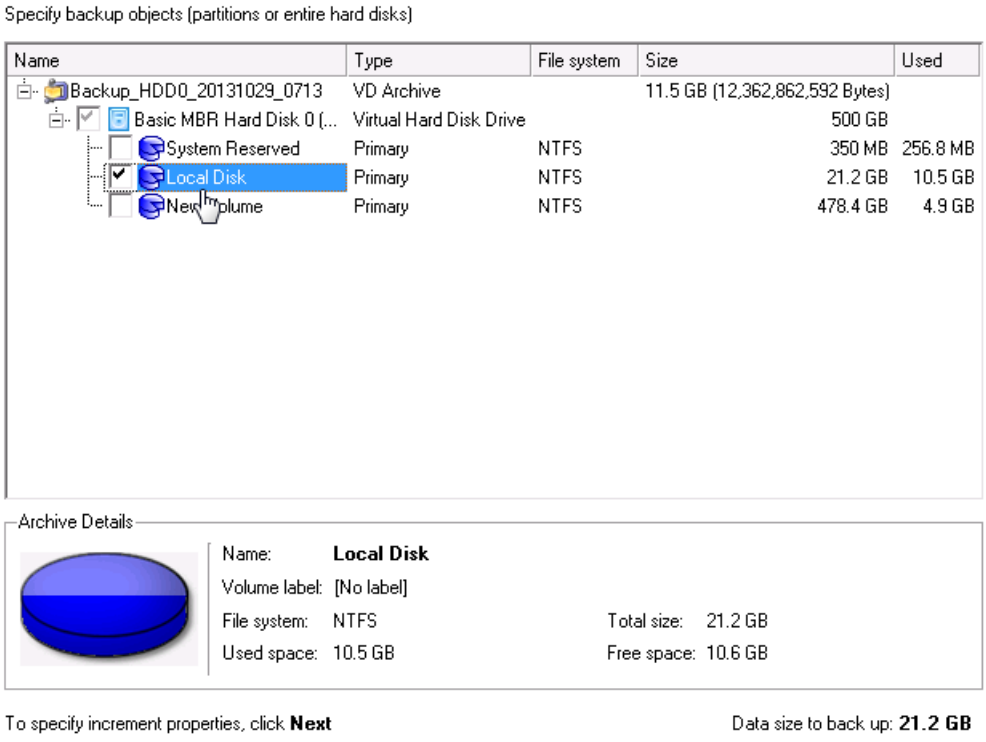

Are you sure you want to merge virtual container "File increment 3" with the parent ?
Please note, that merging the archive can take some time.
Yes
No

The merge operation can only be accomplished if both participants (the last increment and its parent) are unmounted. Otherwise you'll get a corresponding warning.

If you've got one increment in the chain, the merge operation will result in update of the base image, provided there's only one incremental chain from it. Otherwise, the merge operation will be unavailable.

4. The Archive Content page displays detailed information about the contents of the archive.



Advanced backup settings are unavailable for this type of backup.

5. Edit the default description to the created incremental image if necessary. Specify the required method of acquiring information on changed data:

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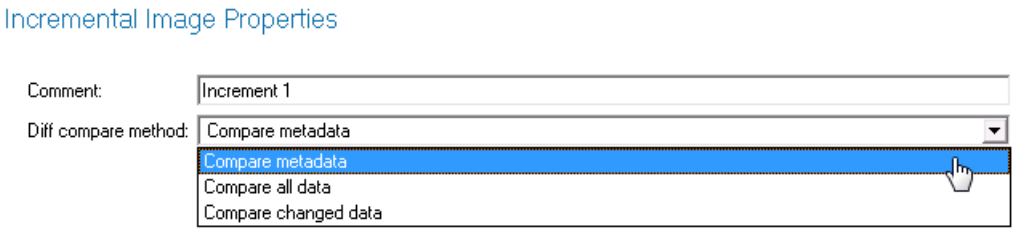
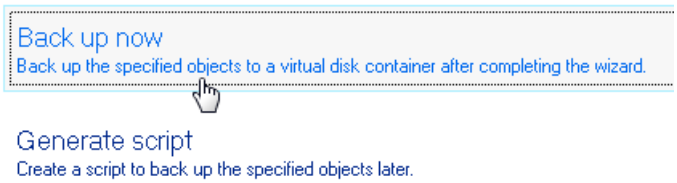


- **Compare metadata** (default). At first file system metadata on each source and backup volume will be analyzed. As a result there will be built pairs of directory trees. If having to do with NTFS, directory trees will be built directly on MFT, skipping the file system analysis. Next action will be comparison of file attributes (e.g. creation/modification date) inside directory trees of the source and backup volumes to:
  - Copy all file clusters with changed attributes;
  - Copy all file clusters with changed location of cluster chains;
  - Copy all clusters of new files;
  - Copy all sectors with metadata, for instance all copies of directories and MFT for NTFS. Depending on a file system and its occupation, a full metadata copy can take up to several hundreds of megabytes.

  This method is the fastest of all three, but increments will also be the largest.
- **Compare all data**. At first there will be created a list of all occupied cluster chains. After comparison with the backup contents, all changed clusters will be copied. This method is slower, but more space saving than the first one. Please note however that if an increment has been done after defragmentation, plenty of redundant data might fall into it, as during the defragmentation process data is being moved, but not changed.
- **Compare changed data**. It's a combination of the mentioned above methods. After detection of new/changed files, there will be created a list of clusters to copy. During the copying, clusters on source and backup volumes will be compared in order to copy only changed clusters and clusters of new files, as well as clusters of changed file system metadata (not all metadata). This method is the slowest of all three, but it can guarantee increments will only contain changed/new data.

6. Choose whether to execute the operation immediately after finishing the wizard and applying the pending changes (only if the virtual mode is enabled) or generate a script file to execute it later.


Back up now
Back up the specified objects to a virtual disk container after completing the wizard.
Generate script
Create a script to back up the specified objects later.

7. Click **Finish** to complete the wizard, then apply the pending changes.

After the operation is completed you receive an incremental update to the selected backup image, placed next to the base image.

This operation can also be accomplished with our recovery media.

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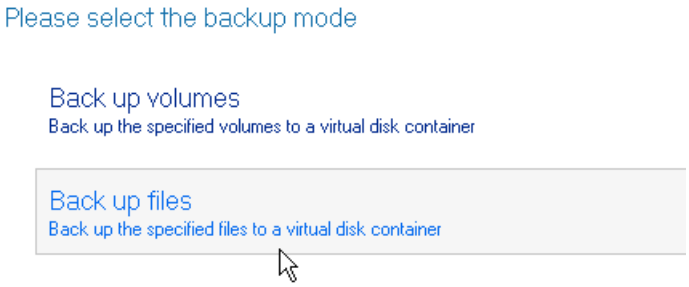
Backing up individual files and folders

To back up required files or folders to a virtual container, please do the following:

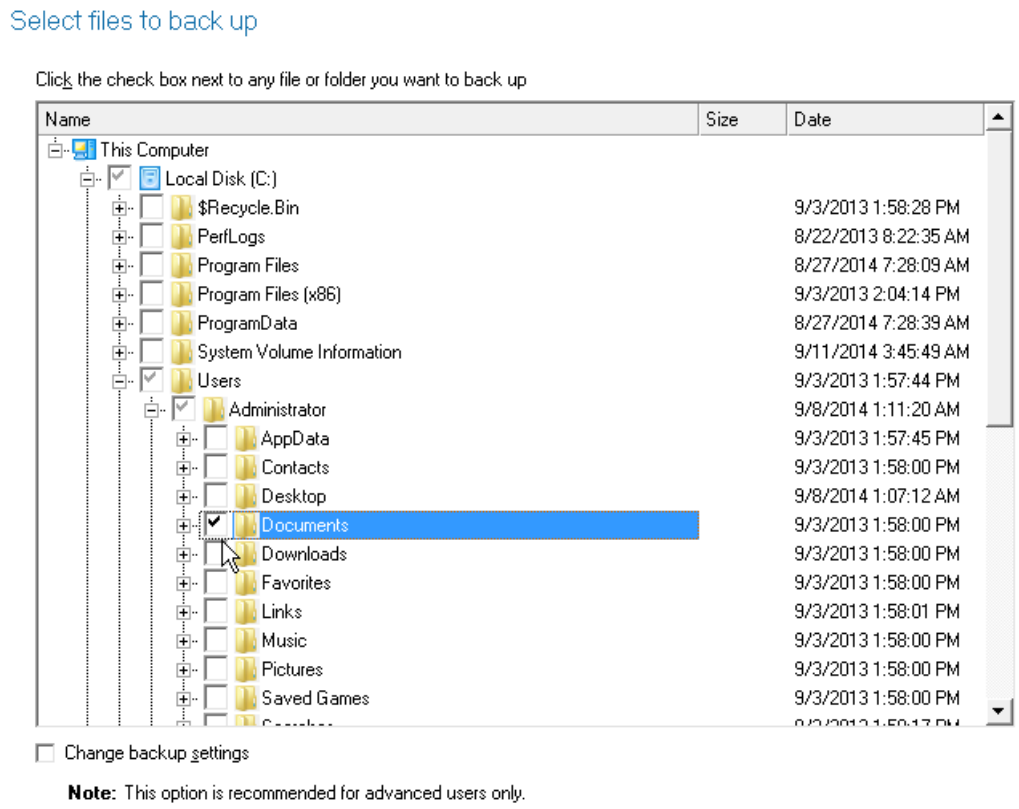
1. Click the **Backup & Restore** tab on the Ribbon Panel, then select **Backup to VD**.

There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.

2. On the Wizard's Welcome page, click the Next button.
3. Select **Back up files** to create a file-level virtual container. Please note that this mode won't help you to restore an operating system.


Please select the backup mode
Back up volumes
Back up the specified volumes to a virtual disk container
Back up files
Back up the specified files to a virtual disk container

4. On the next page you can see a list of all partitions (both mounted and unmounted) available in the system. Mark a checkbox opposite a file, folder or even a whole partition to build up contents of the future backup image.


Select files to back up
Click the check box next to any file or folder you want to back up
Name
Size
Date
This Computer
Local Disk (C:)
$Recycle.Bin 9/3/2013 1:58:28 PM
PerfLogs 8/22/2013 8:22:35 AM
Program Files 8/27/2014 7:28:09 AM
Program Files (x86) 9/3/2013 2:04:14 PM
ProgramData 8/27/2014 7:28:39 AM
System Volume Information 9/11/2014 3:45:49 AM
Users 9/3/2013 1:57:44 PM
Administrator 9/8/2014 1:11:20 AM
AppData 9/3/2013 1:57:45 PM
Contacts 9/3/2013 1:58:00 PM
Desktop 9/8/2014 1:07:12 AM
Documents 9/3/2013 1:58:00 PM
Downloads 9/3/2013 1:58:00 PM
Favorites 9/3/2013 1:58:00 PM
Links 9/3/2013 1:58:01 PM
Music 9/3/2013 1:58:00 PM
Pictures 9/3/2013 1:58:00 PM
Saved Games 9/3/2013 1:58:00 PM
Change backup settings
Note: This option is recommended for advanced users only.

By default the wizard is configured to back up to pVHD (Paragon Virtual Hard Drive). If you'd like to switch the resulted virtual container to VHD, VHDX, or VMDK, additionally mark the **Change backup settings** option. Apart

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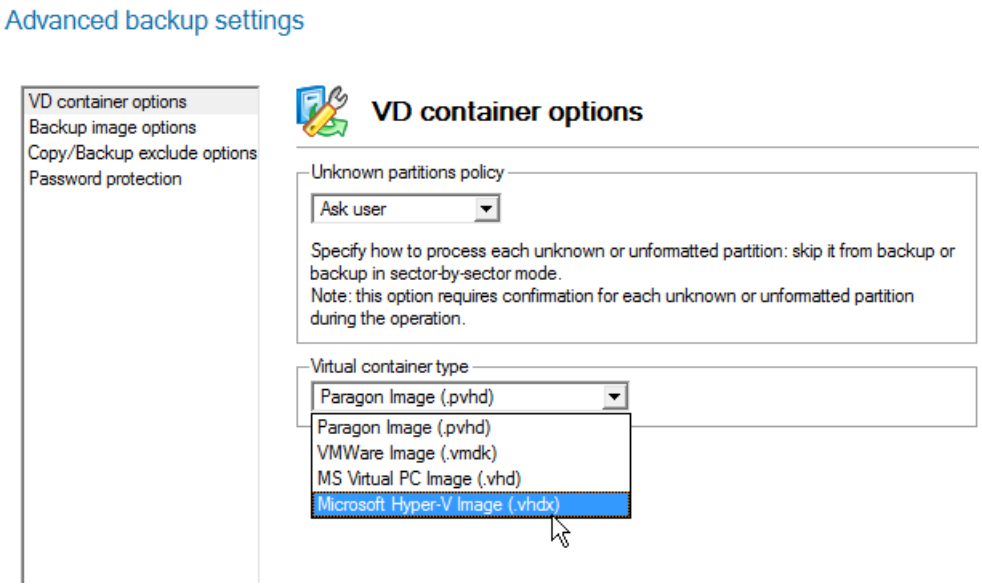
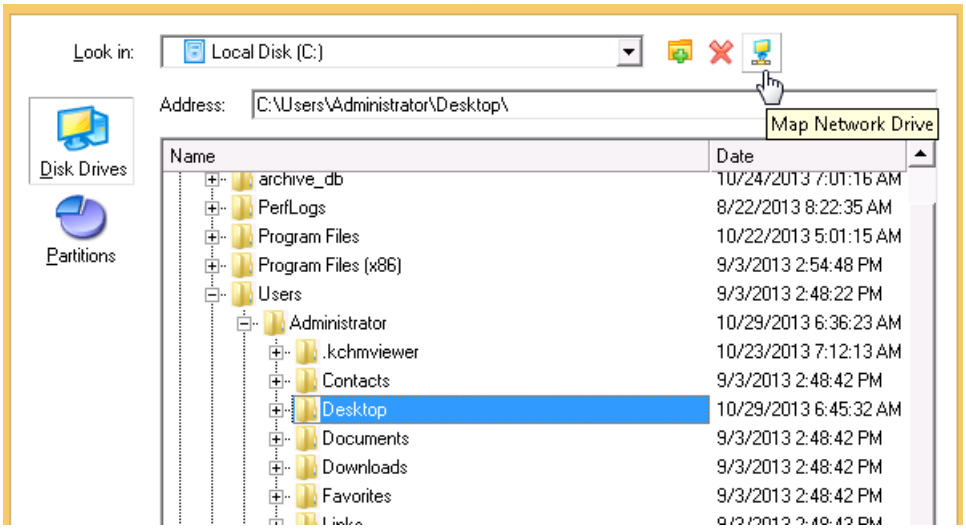
from the desired virtual container type, you can modify other backup parameters. Please consult the Settings Overview section for more information.


Advanced backup settings
VD container options
Backup image options
Copy/Backup exclude options
Password protection
VD container options
Unknown partitions policy
Ask user
Specify how to process each unknown or unformatted partition: skip it from backup or backup in sector-by-sector mode.
Note: this option requires confirmation for each unknown or unformatted partition during the operation.
Virtual container type
Paragon Image (.pvhd)
Paragon Image (.pvhd)
VMWare Image (.vmdk)
MS Virtual PC Image (.vhd)
Microsoft Hyper-V Image (.vhdx)

5. Specify location of the resulted image in the 'Backup destination' section. If you'd like to save it locally, either enter a full path to the target folder in the corresponding field or use the **Browse** button to find it.

If you're going to save the backup image on a network share, or a physical partition (a partition that doesn't have a drive letter in the system), click on the **Browse** button. In the opened dialog you can see several options:



- Select **Disk Drives** to use a local disk as backup destination;
- Select **Partitions** to use a physical partition as backup destination;
- Click on the **Map Network Drive** icon to map a network share to use it as backup destination (our case).

6. Edit the default archive name and description in the 'Archive details' section if necessary. Click **Next** to proceed.

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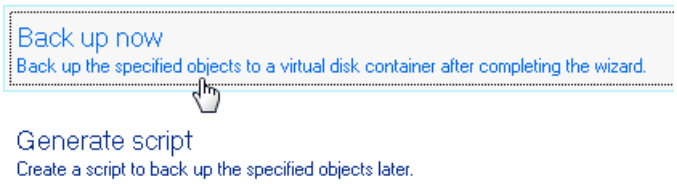
7. Choose whether to execute the operation immediately after finishing the wizard and applying the pending changes (only if the virtual mode is enabled) or generate a script file to execute it later.


Back up now
Back up the specified objects to a virtual disk container after completing the wizard.
Generate script
Create a script to back up the specified objects later.

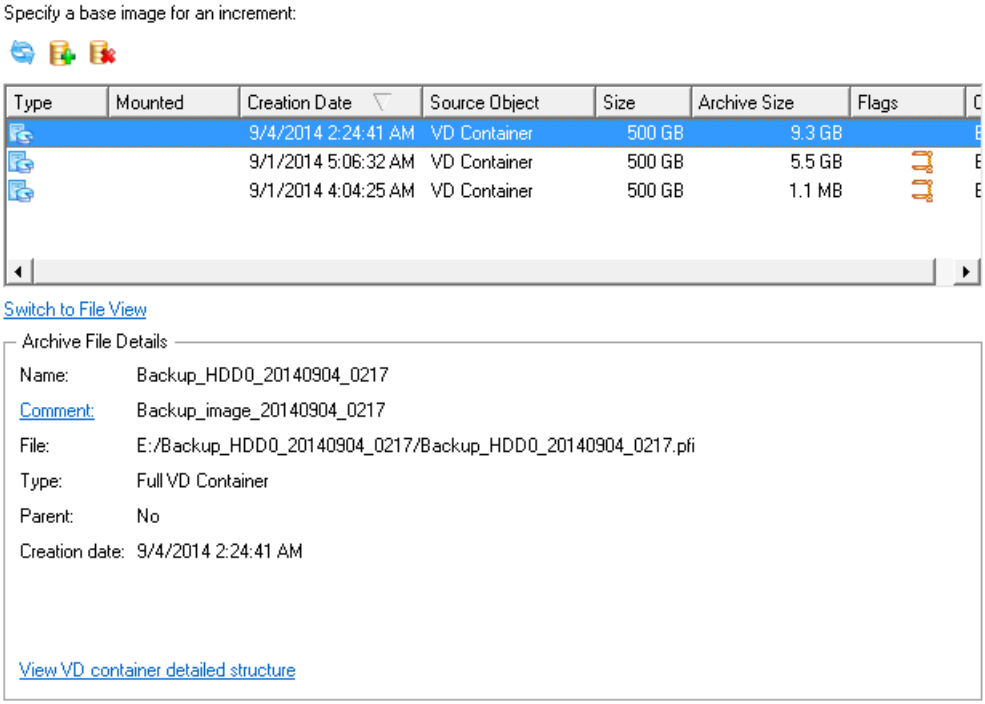
8. Click **Finish** to complete the wizard, then apply the pending changes.

This operation can also be accomplished with our recovery media.

Creating a file complement to a sector-level container

To update only files you need since the last full virtual container, please do the following:

1. Click the **Backup & Restore** tab on the Ribbon Panel, then select **File Complement to VD**.
2. On the Wizard's Welcome page, click the Next button.
3. Specify the required full (base) virtual container:
   - By clicking the **Switch to Archive List View** link, you can see a list of images contained in the Archive Database (if any).



To get a clear-cut picture on properties of the required image, just click on it and the section below will (i.e. Archive File Details) display a short description.

To know more on the subject, please consult the Viewing Image Properties chapter.

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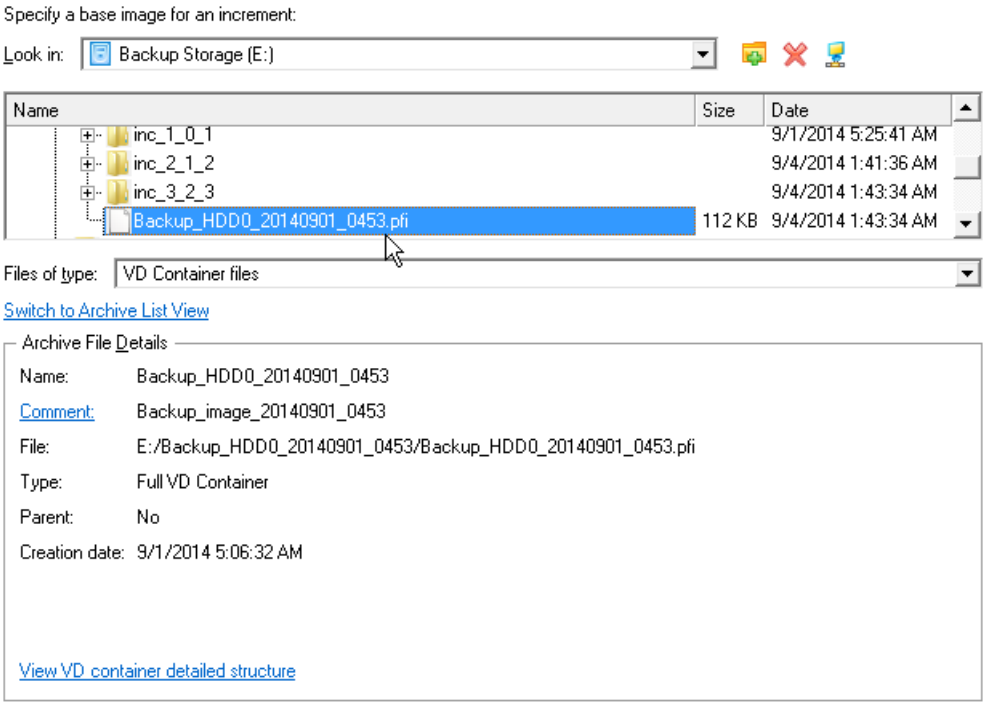
- By clicking the **Switch to File View** link, you can find the required image in the browser-like window. The section below (i.e. Archive File Details) will also display a short description of the selected image.



To know more on the subject, please consult the Viewing Image Properties chapter.

4. On the next page you can see contents of the selected virtual container. Mark a checkbox opposite a file or folder to build up contents of the future incremental image.

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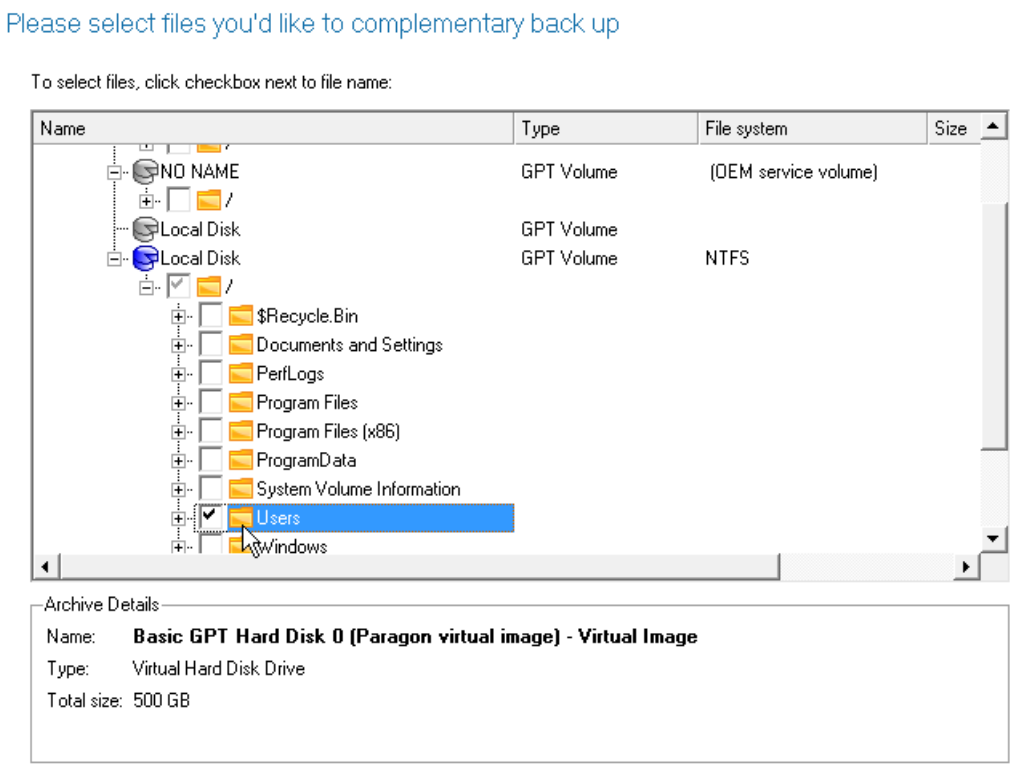
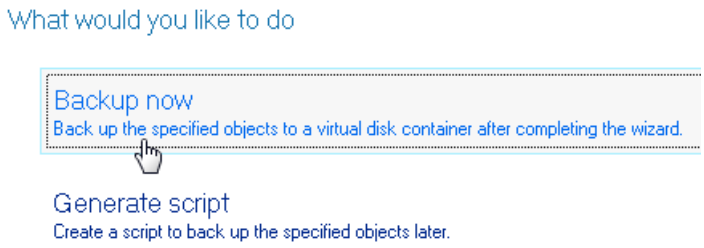


5. Edit the default description to the created incremental image if necessary.

6. Choose whether to execute the operation immediately after finishing the wizard and applying the pending changes (only if the virtual mode is enabled) or generate a script file to execute it later.


What would you like to do
Backup now
Back up the specified objects to a virtual disk container after completing the wizard.
Generate script
Create a script to back up the specified objects later.

7. Click **Finish** to complete the wizard, then apply the pending changes.

This operation can also be accomplished with our recovery media.

Automating regular backup routine

The program includes an efficient tool that helps to set up unattended backup operations involving regular creation of full and incremental images controlled by special backup data retention policies. This tool is fully compliant with the so called set-and-forget backup strategies.

To automate regular backup routine, please do the following:

1. Click the **Backup & Restore** tab on the Ribbon Panel, then select **VD Retention**.

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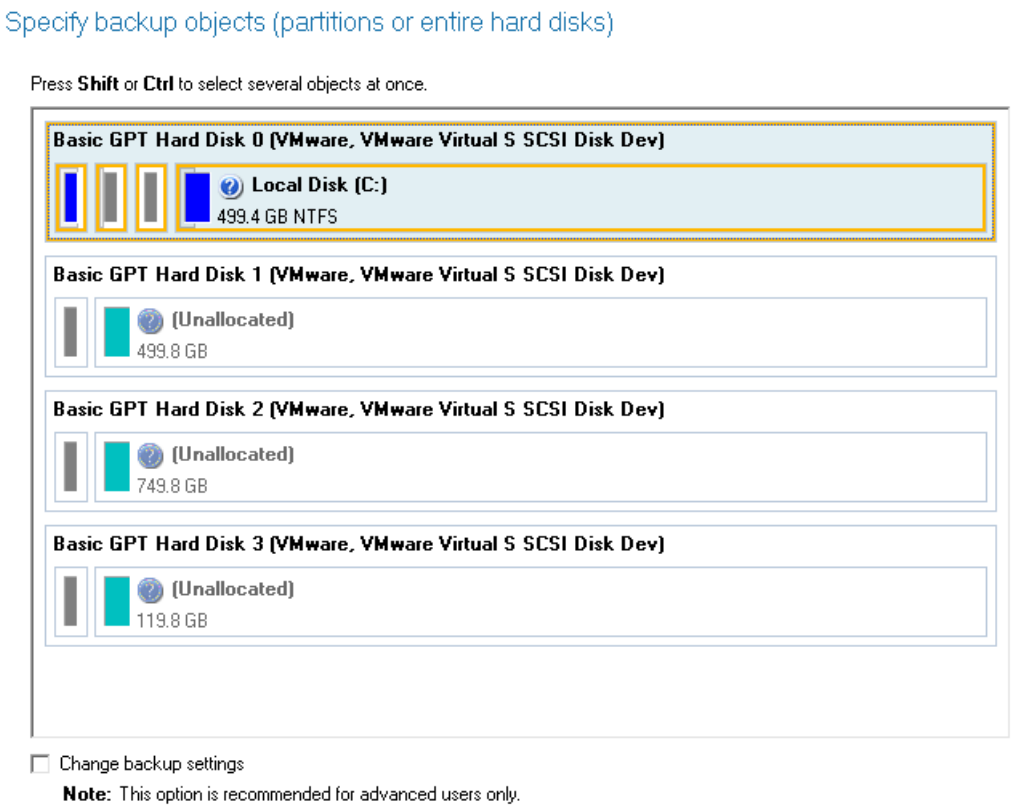
2. On the Wizard's Welcome page, click the Next button.
3. Select partitions or entire hard disks you'd like to back up by using **Shift** or **Ctrl** to select several objects at once. Click **Next** to proceed.


Specify backup objects (partitions or entire hard disks)
Press Shift or Ctrl to select several objects at once.
Basic GPT Hard Disk 0 (VMware, VMware Virtual S SCSI Disk Dev)
Local Disk (C:)
499.4 GB NTFS
Basic GPT Hard Disk 1 (VMware, VMware Virtual S SCSI Disk Dev)
(Unallocated)
499.8 GB
Basic GPT Hard Disk 2 (VMware, VMware Virtual S SCSI Disk Dev)
(Unallocated)
749.8 GB
Basic GPT Hard Disk 3 (VMware, VMware Virtual S SCSI Disk Dev)
(Unallocated)
119.8 GB
Change backup settings
Note: This option is recommended for advanced users only.

You've got the option to modify the default backup settings by marking the appropriate checkbox on this page.

By default the program will take into account exclude filters set in the Settings dialog.

4. Specify location of the resulted virtual containers (pVHD, VHD, VHDX, VMDK) in the 'Backup destination' section. If you'd like to save them locally, either enter a full path to the target folder in the corresponding field or use the **Browse** button to find it.

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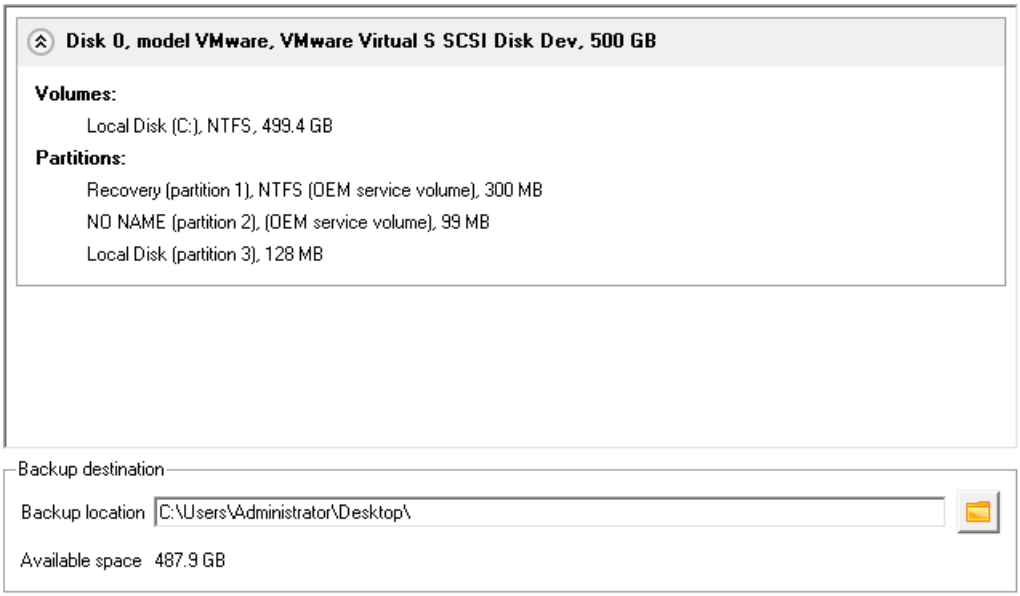
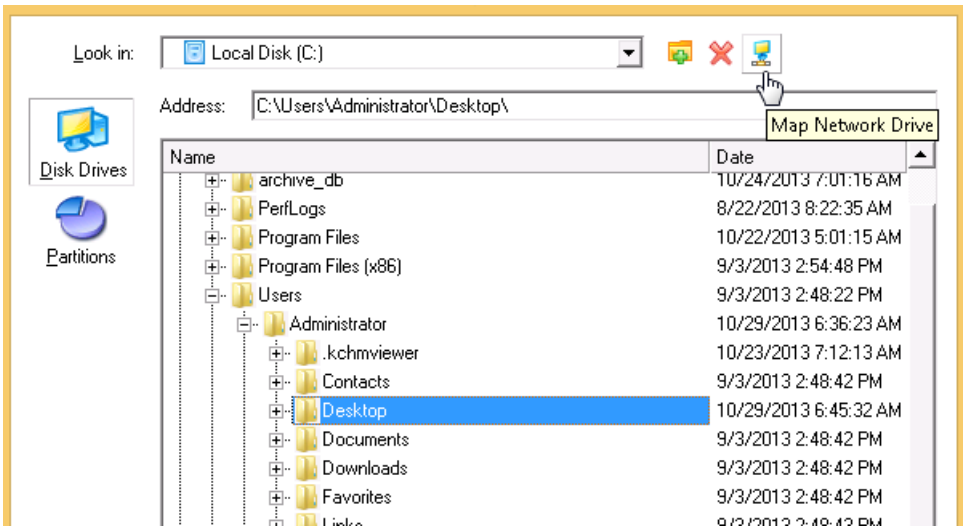
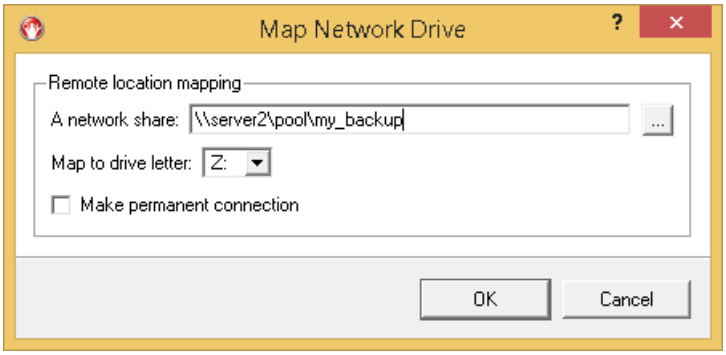

Disk 0, model VMware, VMware Virtual S SCSI Disk Dev, 500 GB
Volumes:
Local Disk (C:), NTFS, 499.4 GB
Partitions:
Recovery (partition 1), NTFS (OEM service volume), 300 MB
NO NAME (partition 2), (OEM service volume), 99 MB
Local Disk (partition 3), 128 MB
Backup destination
Backup location
C:\Users\Administrator\Desktop\
Available space 487.9 GB

If you're going to save backup images on a network share, or a physical partition (a partition that doesn't have a drive letter in the system), click on the **Browse** button. In the opened dialog you can see several options:



- Select **Disk Drives** to use a local disk as backup destination;
- Select **Partitions** to use a physical partition as backup destination;
- Click on the **Map Network Drive** icon to map a network share to use it as backup destination (our case).

5. To map a network share, please do the following:



- Click the standard browse button [...] to browse for the required network share or manually enter a path to it;

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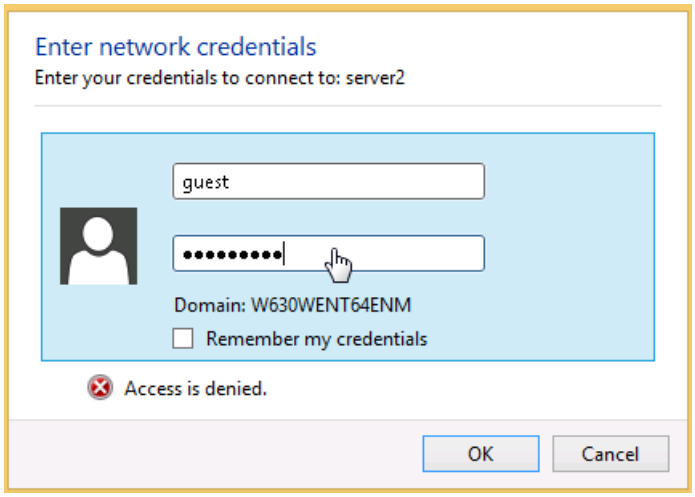
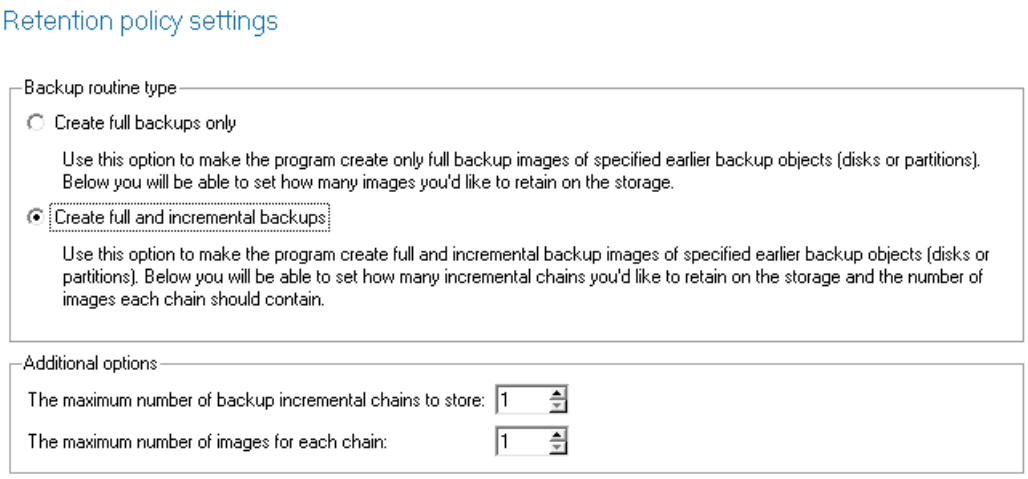
- Define a letter from the pull-down list of available drive letters;
- Mark the checkbox to make this connection permanent. Otherwise it will only be available for the current Windows session;
- Specify a user name and password to access the selected network share if necessary.



- Click **OK** when ready.

6. Edit the default archive name and description in the 'Archive details' section if necessary. This name will help to differentiate images of the specified backup object(s) from other backup images. Each name includes the base part (actually its name) and creation date and time (year, month, day and hour, minutes). Click **Next** to proceed.

7. On the Retention policy settings page, choose the desired backup routine mode:


Retention policy settings
Backup routine type
Create full backups only
Use this option to make the program create only full backup images of specified earlier backup objects (disks or partitions). Below you will be able to set how many images you'd like to retain on the storage.
Create full and incremental backups
Use this option to make the program create full and incremental backup images of specified earlier backup objects (disks or partitions). Below you will be able to set how many incremental chains you'd like to retain on the storage and the number of images each chain should contain.
Additional options
The maximum number of backup incremental chains to store:
1
The maximum number of images for each chain:
1

- **Create full backups only**. Use the option to make the program create full images of the specified backup object(s) only. Additionally you will be able to set the number of images (1 by default) you'd like to retain on the backup storage. On exceeding this parameter the oldest archive will be automatically overwritten.
- **Create full and incremental backups**. Use this option to make the program create full and incremental images of the specified backup object(s). By setting the maximum number of incremental chains to retain (1 by default), you can define the desired number of incremental chains you'd like to retain on the storage, while setting the maximum number of images each chain is allowed to have (1 by default), you can define

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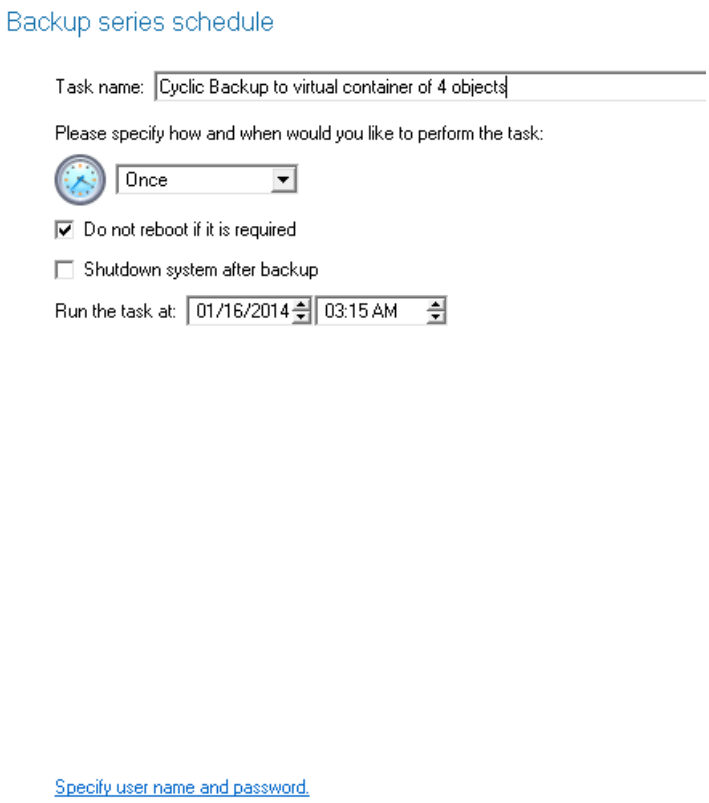
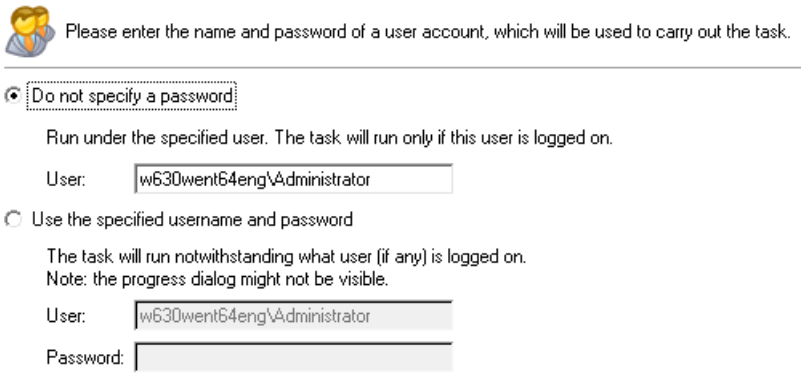
how often you'd like full images to be created. By using these two options you can keep several restore points of the required data with the minimal load on the backup storage.

8. Set a timetable for the operation and a number of additional parameters.


Backup series schedule
Task name: Cyclic Backup to virtual container of 4 objects
Please specify how and when would you like to perform the task:
Once
Do not reboot if it is required
Shutdown system after backup
Run the task at: 01/16/2014 03:15 AM
Specify user name and password.

By clicking the **Specify user name and password** link you can define, whether to allow the program to do backups under the current user (a backup task will only start if this user is logged on) or provide credentials (name and password) of a particular user (recommended, as a backup task will be able to start no matter what user is logged on, if any).


Please enter the name and password of a user account, which will be used to carry out the task.
Do not specify a password
Run under the specified user. The task will run only if this user is logged on.
User: w630went64eng\Administrator
Use the specified username and password
The task will run notwithstanding what user (if any) is logged on.
Note: the progress dialog might not be visible.
User: w630went64eng\Administrator
Password:

To know more on the subject, please consult the Task Scheduling chapter.

9. Click **Finish** to complete the wizard, then apply the pending changes.

The operation will run according to the set timetable. The resulted backup images will be placed into the specified destination (a local or a network disk), its features defined by the wizard.

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Legacy Backup Format

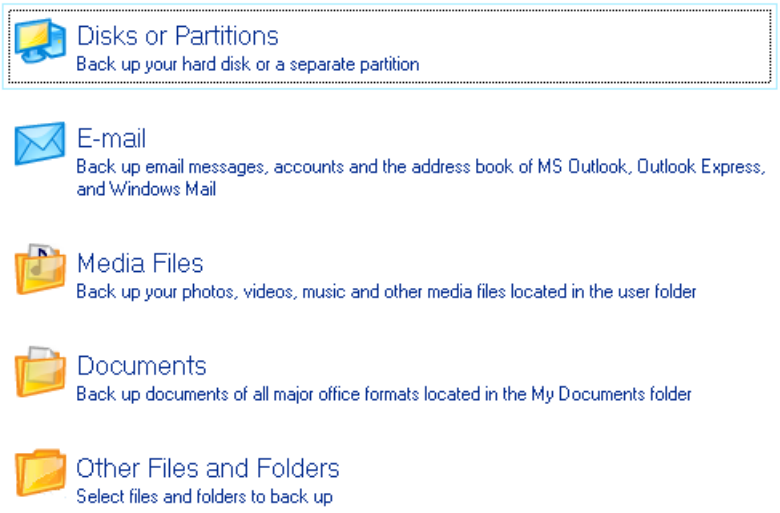
Backing up a hard disk or partition to the Backup Capsule

To back up an entire hard disk or a separate partition and then place the resulted image into the backup capsule, please do the following:

1. Create the backup capsule with the Manage Backup Capsule Wizard.
2. Enable the Legacy features view.
3. Click the **Backup & Restore** tab on the Ribbon Panel, then select **Smart Backup**.

There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.

4. On the Wizard's Welcome page, click the Next button.
5. On the What to back up page, select **Disk or Partitions** to create a sector-based backup of the whole disk system, or only separate partitions.


Disks or Partitions
Back up your hard disk or a separate partition
E-mail
Back up email messages, accounts and the address book of MS Outlook, Outlook Express, and Windows Mail
Media Files
Back up your photos, videos, music and other media files located in the user folder
Documents
Back up documents of all major office formats located in the My Documents folder
Other Files and Folders
Select files and folders to back up

6. On the next page, mark the appropriate option opposite a hard disk's name or a partition's name depending on the chosen task.

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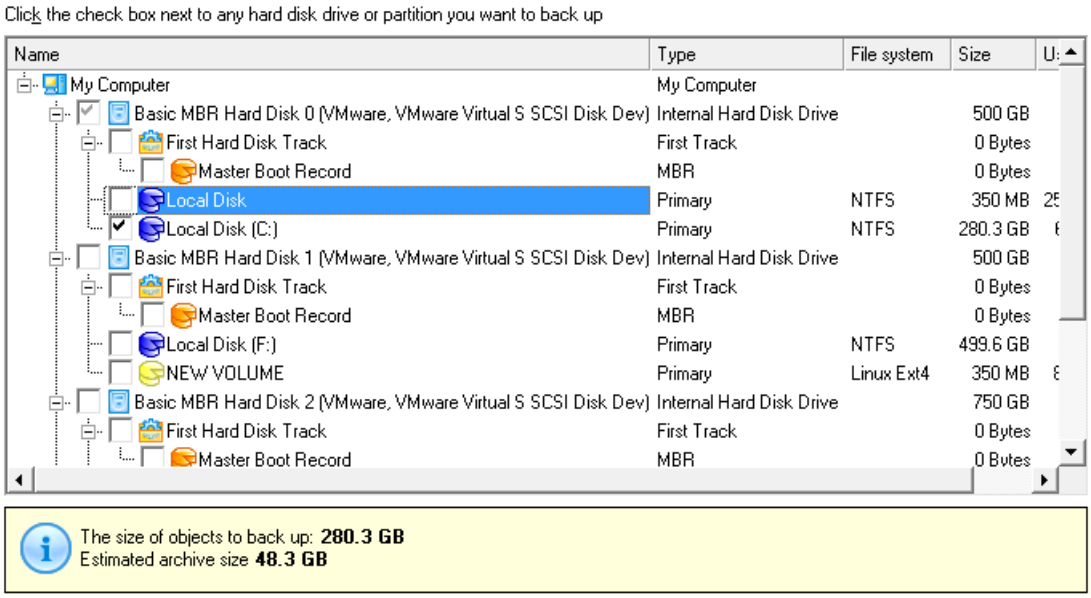
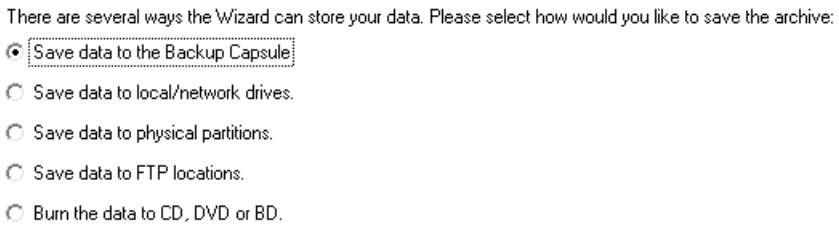


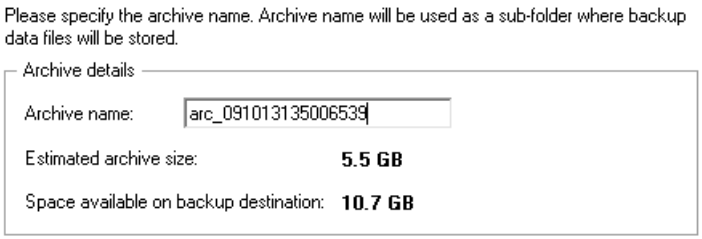
You've got the option to modify the default backup settings by marking the appropriate checkbox on this page.

By default the program will take into account exclude filters set in the Settings dialog.

7. On the Backup Destination page, select the **Save data to the Backup Capsule** option.


There are several ways the Wizard can store your data. Please select how would you like to save the archive:
Save data to the Backup Capsule
Save data to local/network drives.
Save data to physical partitions.
Save data to FTP locations.
Burn the data to CD, DVD or BD.

8. Edit the archive name if necessary.


Please specify the archive name. Archive name will be used as a sub-folder where backup data files will be stored.
Archive details
Archive name:
arc_091013135006539
Estimated archive size:
5.5 GB
Space available on backup destination:
10.7 GB

Please take into account values of the parameters Estimated archive size and Space available on backup destination - if the archive size exceeds the available space, delete outdated backups from the Backup Capsule or resize it with the Manage Backup Capsule Wizard.

9. Add comments to your backup describing its contents.

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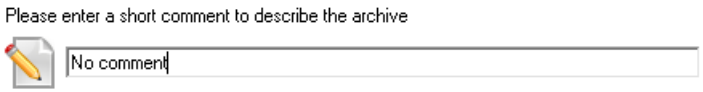


10. On the Backup Summary page review all parameters of the operation and modify them if necessary. Click the Next button to start the backup process.

This operation can also be accomplished with our recovery media.

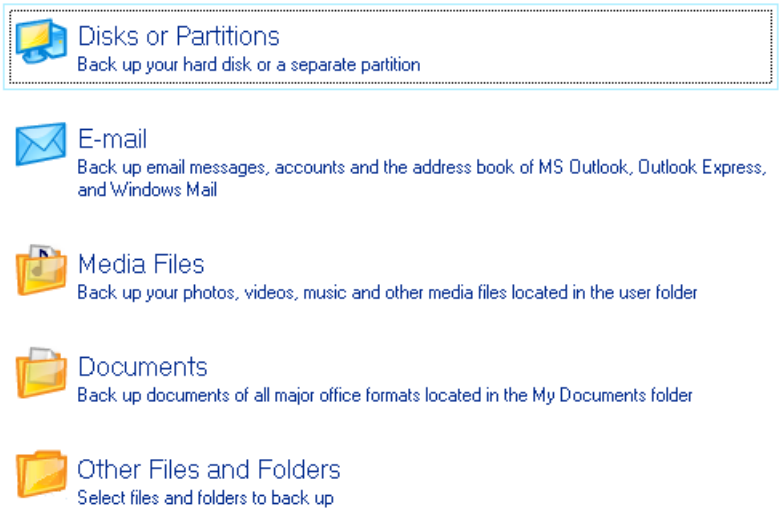
Backing up a hard disk or partition to external media (CD/DVD)

To back up an entire hard disk or a separate partition and then burn the resulted image to CD/DVD, please do the following:

1. Enable the Legacy features view.
2. Click the **Backup & Restore** tab on the Ribbon Panel, then select **Smart Backup**.

There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.

3. On the Wizard's Welcome page, click the Next button.
4. On the What to back up page, select **Disk or Partitions** to create a sector-based backup of the whole disk system, or only separate partitions.


Disks or Partitions
Back up your hard disk or a separate partition
E-mail
Back up email messages, accounts and the address book of MS Outlook, Outlook Express, and Windows Mail
Media Files
Back up your photos, videos, music and other media files located in the user folder
Documents
Back up documents of all major office formats located in the My Documents folder
Other Files and Folders
Select files and folders to back up

5. On the next page, mark the appropriate option opposite a hard disk's name or a partition's name depending on the chosen task.

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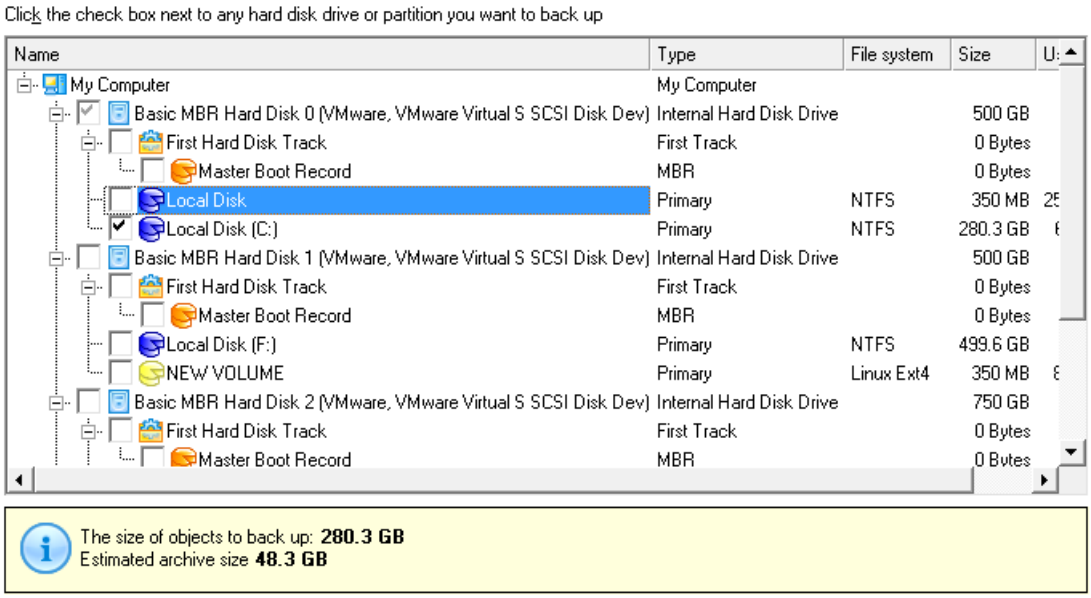
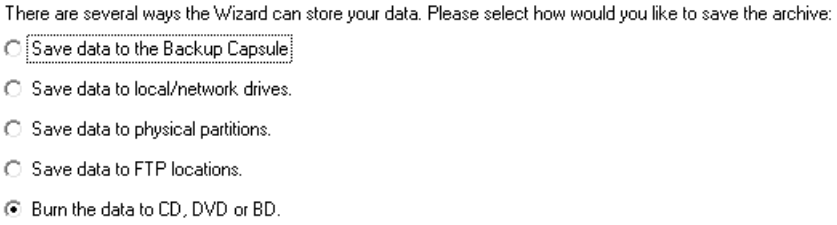


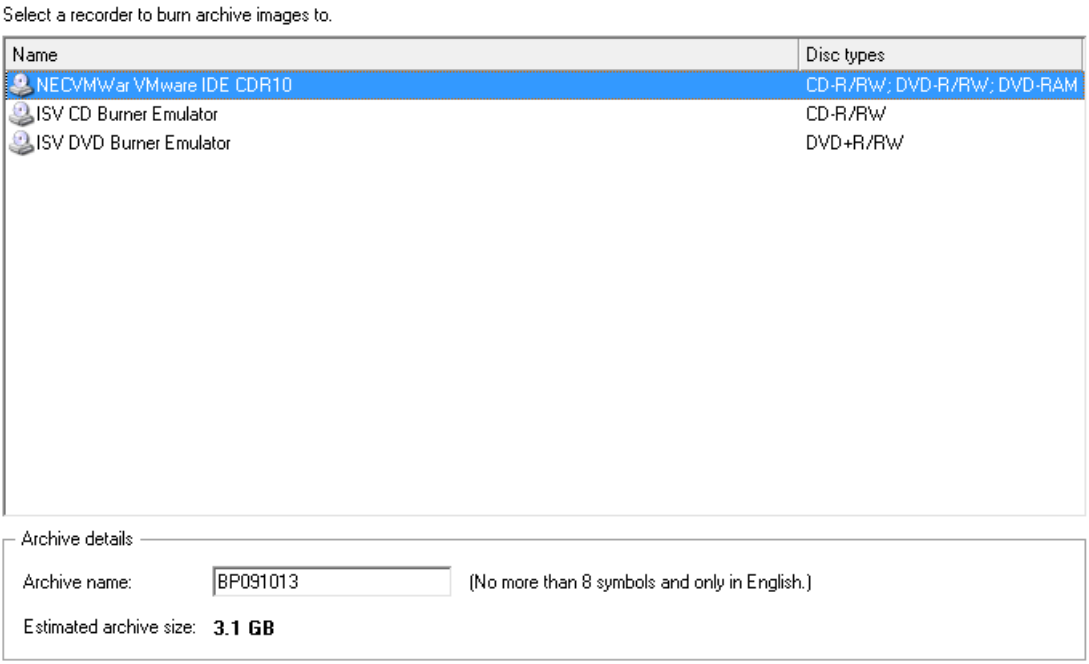
You've got the option to modify the default backup settings by marking the appropriate checkbox on this page.

By default the program will take into account exclude filters set in the Settings dialog.

6. On the Backup Destination page, select the **Burn the data to CD or DVD** option.


There are several ways the Wizard can store your data. Please select how would you like to save the archive:
Save data to the Backup Capsule
Save data to local/network drives.
Save data to physical partitions.
Save data to FTP locations.
Burn the data to CD, DVD or BD.

7. Select a recordable device on the list of available CD/DVD devices and edit the archive name, if necessary.



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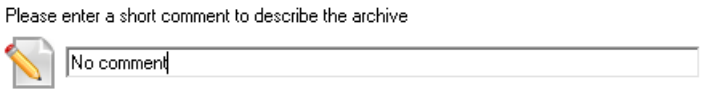
Please take into account the Estimated archive size value. It can give you a hint about the number of CD/DVD discs required for the operation.

8. Add comments to your backup describing its contents.



9. On the Backup Summary page review all parameters of the operation and modify them if necessary. Click the Next button to start the backup process.

This operation can also be accomplished with our recovery media.

Backing up a hard disk or partition to a network drive

To back up an entire hard disk or a separate partition and then place the resulted image to a network share, please do the following:

1. Enable the Legacy features view.
2. Click the **Backup & Restore** tab on the Ribbon Panel, then select **Smart Backup**.

There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.

3. On the Wizard's Welcome page, click the Next button.
4. On the What to back up page, select **Disk or Partitions** to create a sector-based backup of the whole disk system, or only separate partitions.

Disks or Partitions
Back up your hard disk or a separate partition
E-mail
Back up email messages, accounts and the address book of MS Outlook, Outlook Express, and Windows Mail
Media Files
Back up your photos, videos, music and other media files located in the user folder
Documents
Back up documents of all major office formats located in the My Documents folder
Other Files and Folders
Select files and folders to back up

5. On the next page, mark the appropriate option opposite a hard disk's name or a partition's name depending on the chosen task.

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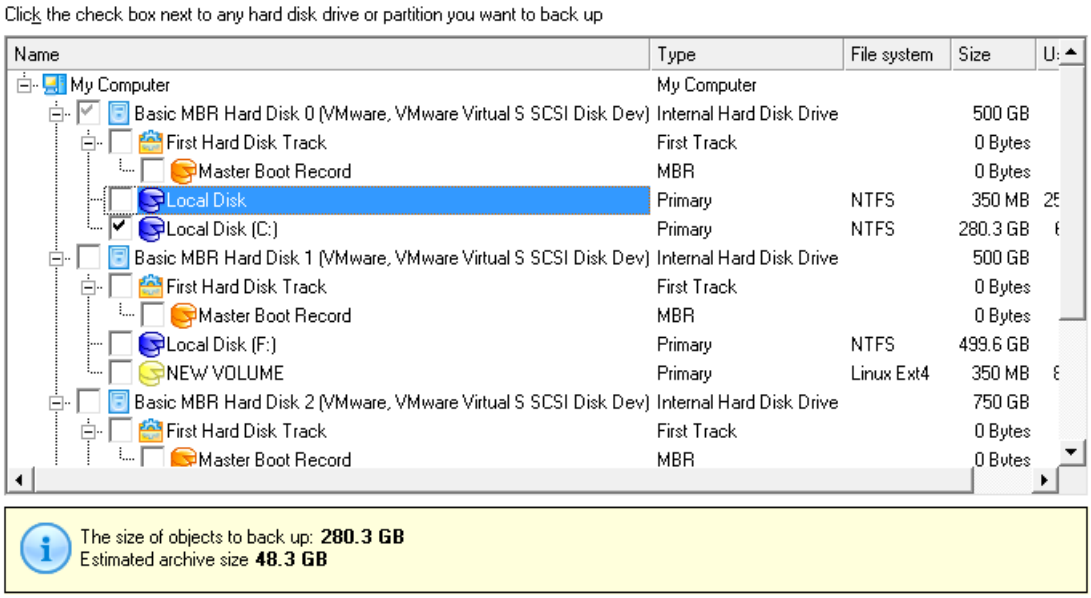
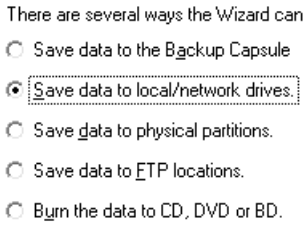


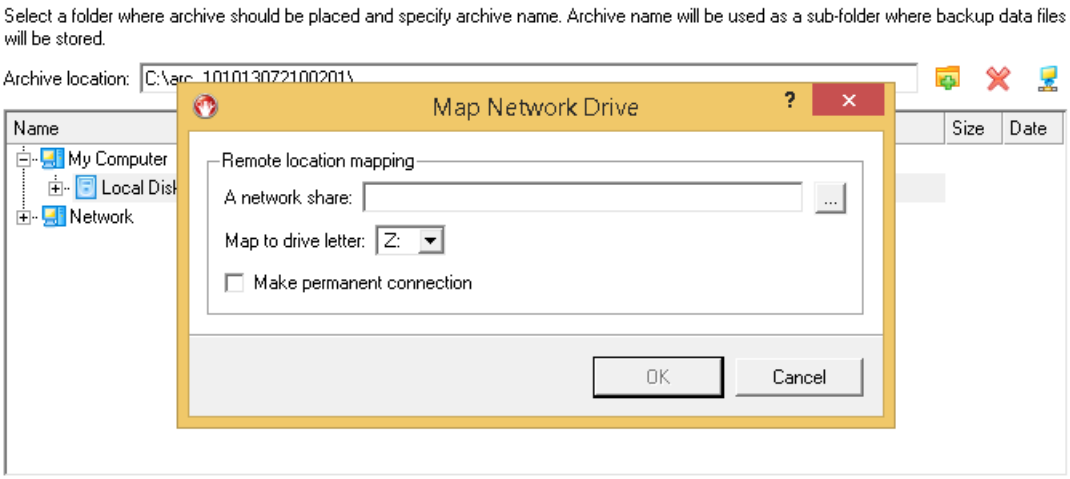
You've got the option to modify the default backup settings by marking the appropriate checkbox on this page.

By default the program will take into account exclude filters set in the Settings dialog.

6. On the Backup Destination page, select the **Save data to local/network drives** option.


There are several ways the Wizard can store your data. Please select how would you like to save the archive:
Save data to the Backup Capsule
Save data to local/network drives.
Save data to physical partitions.
Save data to FTP locations.
Burn the data to CD, DVD or BD.

7. Map a network disk to place your backup image to:
   - Call the Map Network Drive dialog by clicking the appropriate button;



   - Click the standard browse button [...] to browse for the required network share or manually enter a path to it;
   - Define a letter from the pull-down list of available drive letters;

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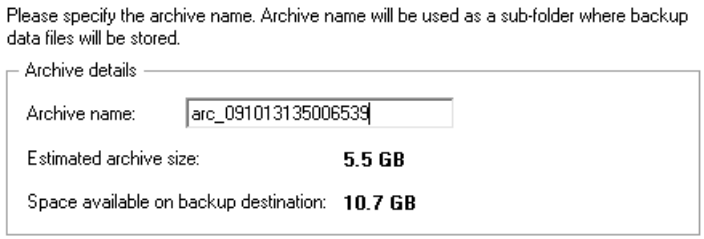
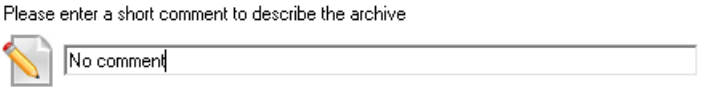
- Mark the checkbox to make this connection permanent. Otherwise it will only be available for the current Windows session;
- Click the Connect as user button at the foot of the dialog page to specify a user name and password to access the selected network share if necessary.

8. Edit the archive name if necessary.


Please specify the archive name. Archive name will be used as a sub-folder where backup data files will be stored.
Archive details
Archive name:
arc_091013135006539
Estimated archive size:
5.5 GB
Space available on backup destination:
10.7 GB

Please take into account values of the parameters Estimated archive size and Space available on backup destination - if the archive size exceeds the available space, another network drive needs to be selected.

9. Add comments to your backup describing its contents.



10. On the Backup Summary page review all parameters of the operation and modify them if necessary. Click the Next button to start the backup process.

Backing up files to an FTP/SFTP server

With our program you can protect the entire system, separate partitions, or particular files by backing up directly to online storages located on FTP or SFTP servers. Please note however, that due to certain limitations of the network bandwidth, the use of FTP/SFTP locations for storing many GBs of data (OS together with all on-disk data) isn't the best choice, but it's great for personal data, like your documents, email databases, photos, etc.

So let's see how to back up all office documents of the My Documents folder to an SFTP server:

1. Enable the Legacy features view.
2. Click the **Backup & Restore** tab on the Ribbon Panel, then select **Smart Backup**.

There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.

3. On the Wizard's Welcome page, click the Next button.
4. On the What to back up page, select **Documents** to protect all office documents inside the My Documents folder.

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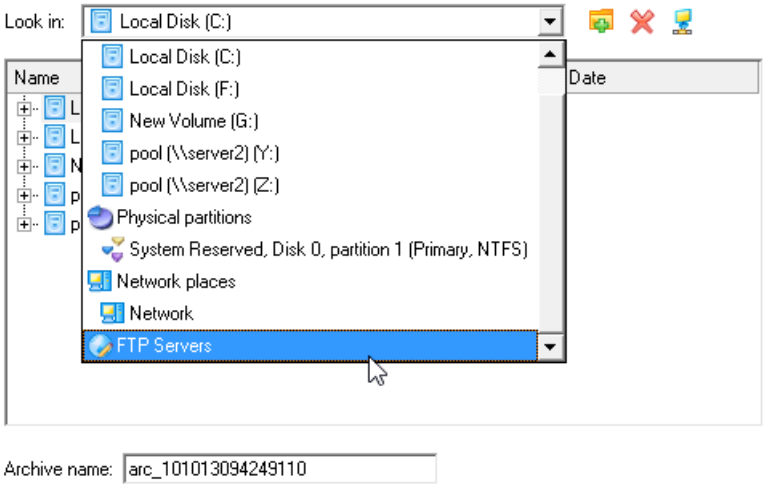
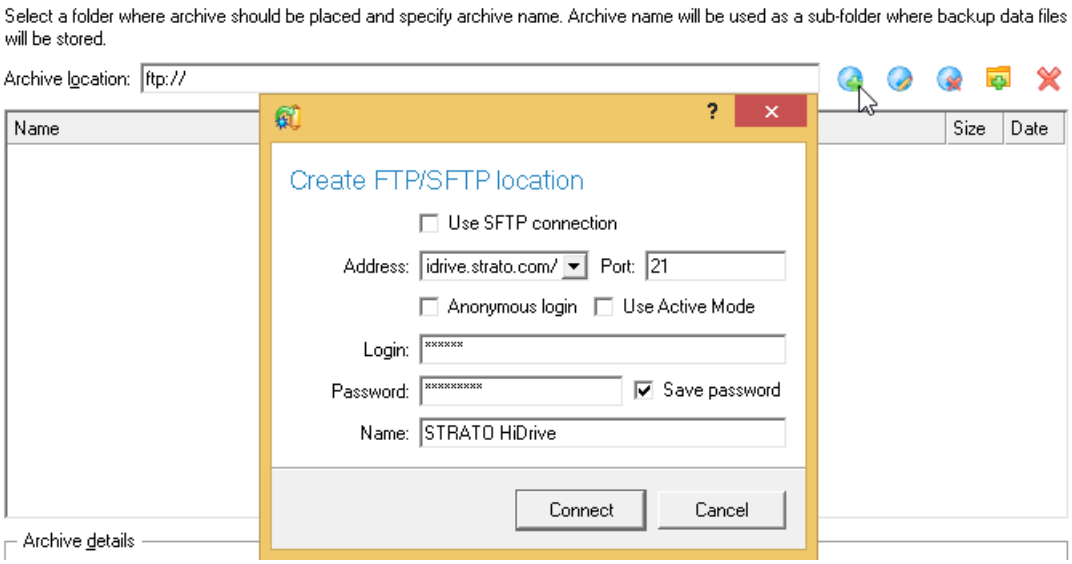
Disks or Partitions
Back up your hard disk or a separate partition
E-mail
Back up email messages, accounts and the address book of MS Outlook, Outlook Express, and Windows Mail
Media Files
Back up your photos, videos, music and other media files located in the user folder
Documents
Back up documents of all major office formats located in the My Documents folder
Other Files and Folders
Select files and folders to back up

5. On the next page, choose **FTP Servers** as backup storage.



6. Click on the **Create an FPT Location** button to set up parameters for the required SFTP location.



- **Use SFTP connection**. Mark the option to connect to the desired SFTP server;

- **Address**. Type in its address;

- **Port**. Specify the required port (22 by default);

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- **Anonymous login**. Mark the option to set up anonymous connection. Typical username for this type of login is “anonymous”;

- **Allow Open SSH key-based authentication**. If your SFTP provider requires this type of authentication, mark the option to specify public and private keys and a passphrase;

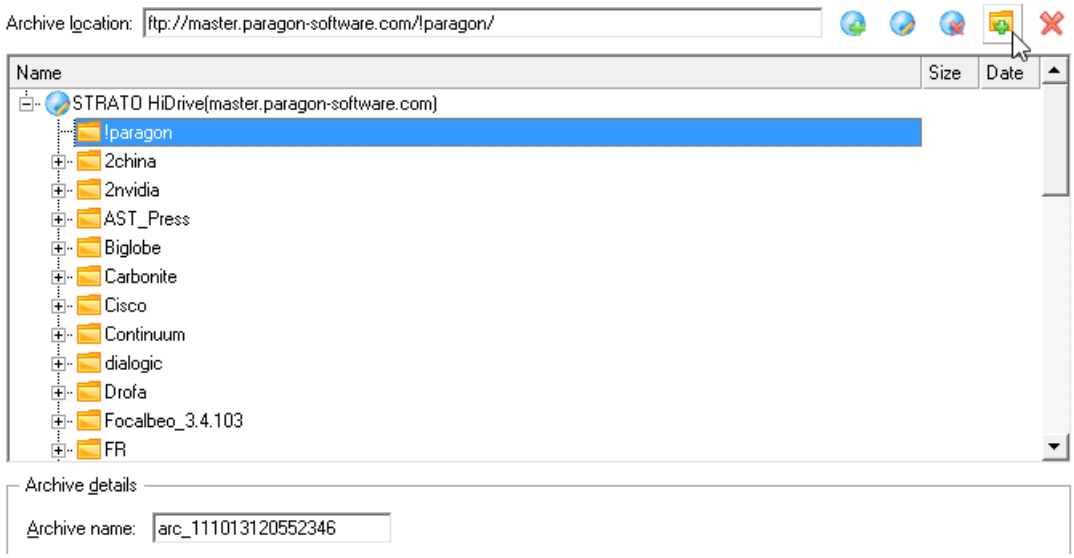
- **Login**. Enter a login;

- **Password**. Enter a password. Click **Remember password** to save it next time you back up to this location;

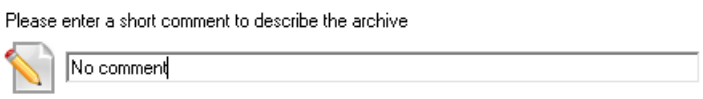
- **Name**. By default, the program uses the provided address as the connection name, which can be modified however.

You need to check out yourself Windows Firewall or programs of this kind let our program work with the required port (21 for FTP and 22 for SFTP by default).

7. When ready, click the **Connect** button to check out you’ve got access to the provided location. If yes, you’ll get a new item on the list named after this location. By clicking the + icon you can browse it to specify a more exact location for your backup. At this stage you can also edit the default archive name if necessary.



8. Add comments to your backup describing its contents.



9. To prevent unauthorized access to your personal data, we strongly recommend you to password protect your backup.

ENU

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10. On the Backup Summary page review all parameters of the operation and modify them if necessary. Click the Next button to start the backup process.

This operation can also be accomplished with our recovery media.

Backing up a dual boot Mac to an external USB drive

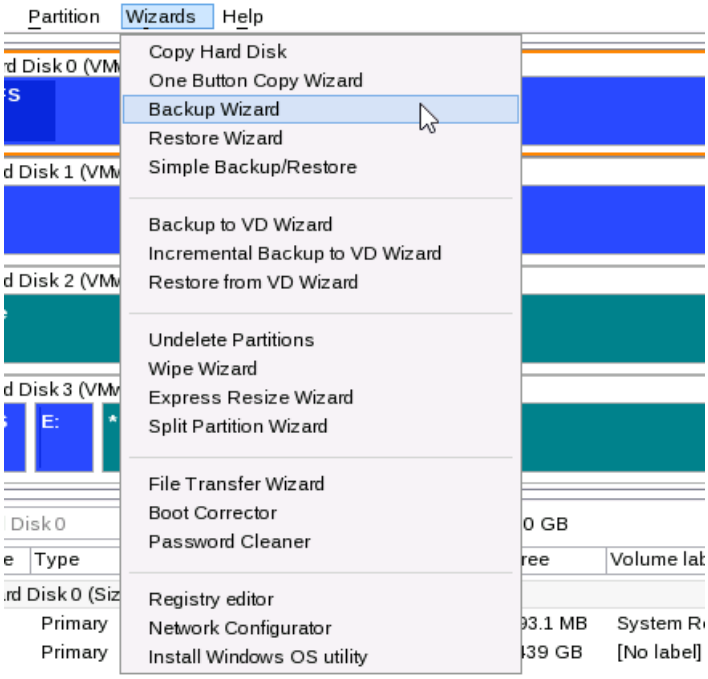
To back up a dual boot Mac (Mac OS X and Windows XP/Vista/7/8) and then place the resulted image to an external USB drive, please do the following:

1. Start up the computer from our Linux/DOS recovery media.

Please use Recovery Media Builder to prepare Paragon's recovery environments on CD/DVD, flash, or in an ISO-image.

To automatically boot from the recovery media please make sure the on-board BIOS is set up to boot from CD/USB first.

2. Connect an external USB drive to the computer.
3. Restart the computer. It will be automatically started up into the Linux recovery environment (**Normal Mode**), since it's the only mode that provides support for Mac computers.
4. In the Linux launch menu select **Backup & Recovery**.
5. Launch the Backup Wizard by selecting in the Main Menu of the program: **Wizards > Backup Wizard**.



6. On the Wizard's Welcome page, click the Next button.
7. On the What to back up page, select your Mac hard disk.

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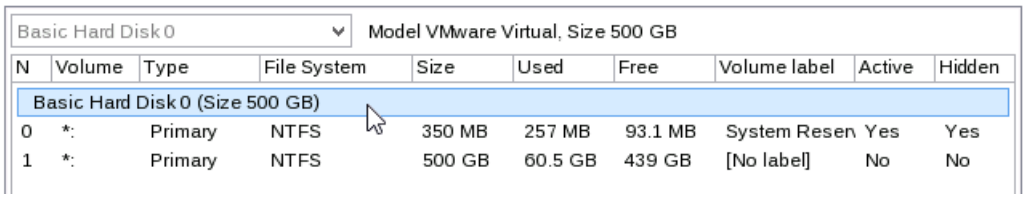
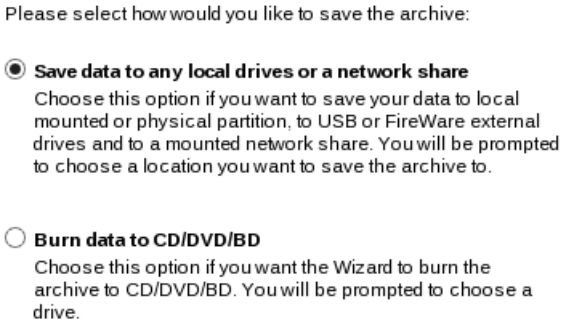
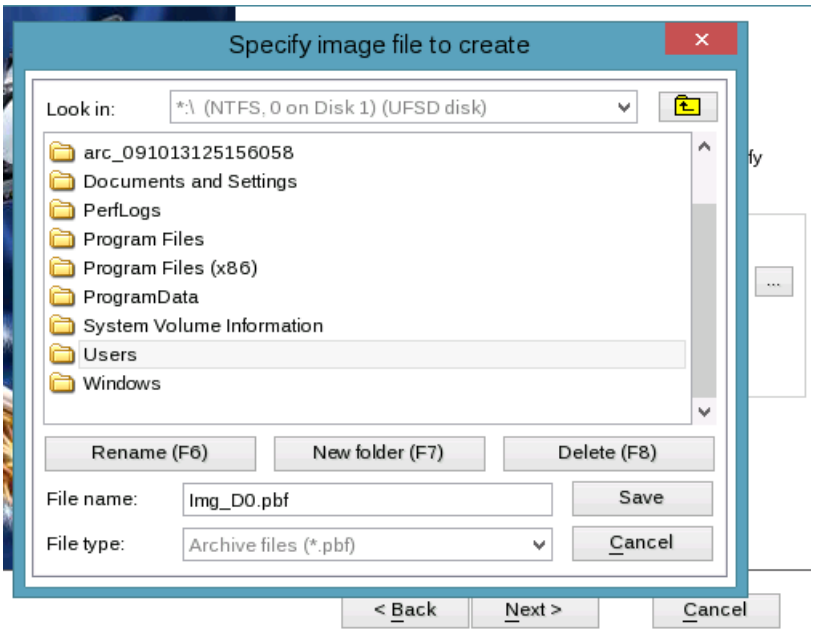

Basic Hard Disk 0
Model VMware Virtual, Size 500 GB
N Volume Type File System Size Used Free Volume label Active Hidden
Basic Hard Disk 0 (Size 500 GB)
0 *: Primary NTFS 350 MB 257 MB 93.1 MB System Resen Yes Yes
1 *: Primary NTFS 500 GB 60.5 GB 439 GB [No label] No No

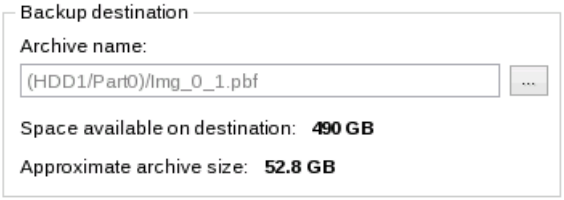
8. On the Backup Destination page, select the **Save data to any local drive or a network share** option.


Please select how would you like to save the archive:
Save data to any local drives or a network share
Choose this option if you want to save your data to local mounted or physical partition, to USB or FireWare external drives and to a mounted network share. You will be prompted to choose a location you want to save the archive to.
Burn data to CD/DVD/BD
Choose this option if you want the Wizard to burn the archive to CD/DVD/BD. You will be prompted to choose a drive.

9. Select an external USB drive as a backup destination.



10. Edit the archive name if necessary.



Please take into account values of the parameters Estimated archive size and Space available on backup destination - if the archive size exceeds the available space, another drive needs to be selected.

11. Add comments to your backup describing its contents.

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12. On the Backup Summary page review all parameters of the operation and modify them if necessary. Click the Next button to start the backup process.

This operation can also be accomplished under Windows.

Backing up files to a local mounted/unmounted (without drive letter assigned) partition

To back up required files or folders and then place the resulted image to a local mounted/unmounted drive, please do the following:

1. Enable the Legacy features view.
2. Click the **Backup & Restore** tab on the Ribbon Panel, then select **Smart Backup**.

There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.

3. On the Wizard's Welcome page, click the Next button.
4. On the What to back up page, first take a look at the ready-made backup templates. If none of the options meets you needs (just our case), then select **Other Files and Folders** to create a file-based backup of certain data.

Disks or Partitions
Back up your hard disk or a separate partition
E-mail
Back up email messages, accounts and the address book of MS Outlook, Outlook Express, and Windows Mail
Media Files
Back up your photos, videos, music and other media files located in the user folder
Documents
Back up documents of all major office formats located in the My Documents folder
Other Files and Folders
Select files and folders to back up

5. On the What folders and files to back up page you can see a list of all partitions (both mounted and unmounted) available in the system. Mark a checkbox opposite a file, folder or even a whole partition to build up contents of the future backup image.

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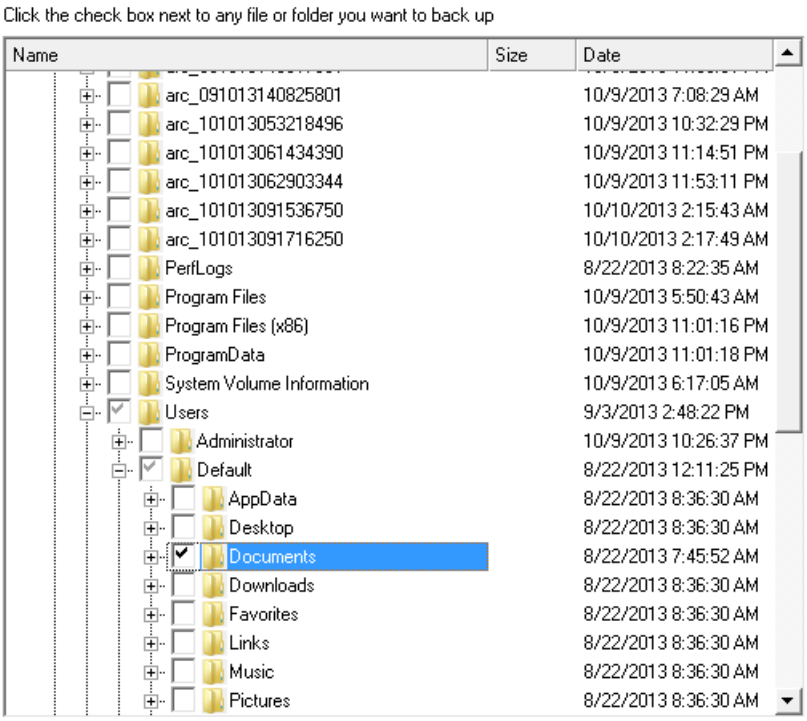
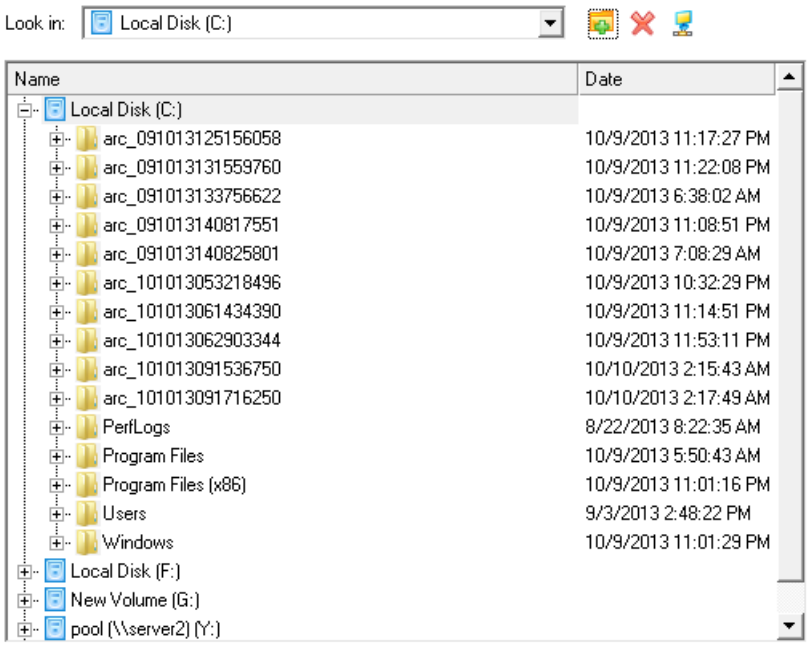
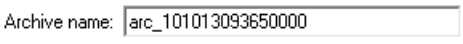


6. On the Backup Destination page, select a local mounted/unmounted (without drive letter assigned) disk as a backup destination.



7. Edit the archive name if necessary.



8. **Specify include masks**. The program includes a lot of ready-made filters to effectively control contents of your backup images.

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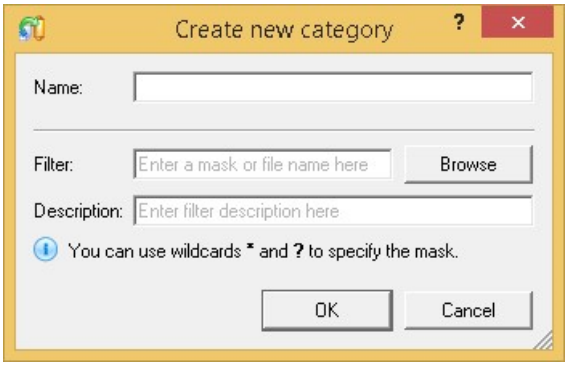
Include masks manage files and folders that will be added to the archive.
If include mask is specified, all the files that do not conform to the mask will be omitted and will not get into the archive.
Do not use include masks (all files will be included into the archive)
Use include masks
Readable files (44 filters)
Add filter
Rename category
Delete category
*.chm Delete filter
*.htm Delete filter
*.mht Delete filter
*.html Delete filter
*.pdf Delete filter
*.txt Delete filter
*.hlp Delete filter
*.rtf Delete filter
*.doc Delete filter
*.docx Delete filter
*.xls Delete filter
*.xlsx Delete filter
*.wri Delete filter
*.ppt Delete filter
*.pptx Delete filter
Add category...

You can also create your own filter by clicking the **Add category…** button.



- **Name**. Give to the filter any name you like, but try to use an informative one;
- **Filter**. Press the Browse button to select files or folders you would like to be included or specify a filter mask by using * or ? wildcards;
- **Description**. Add a short description to the filter not to miss it up later.

Click the OK button and you will get a new item on the list of filters. By marking/unmarking a checkbox opposite its name you can choose whether to use it or not.

By setting an include mask, you automatically ignore files that do not match to it, thus they won't be added to the backup image.

9. **Specify exclude masks**. The program includes a lot of ready-made filters to effectively control contents of your backup images.

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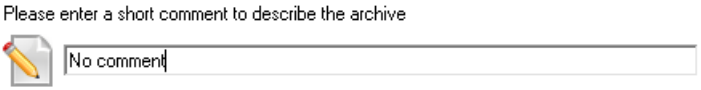
10. Add comments to your backup describing its contents.



11. To prevent unauthorized access to your personal data, we strongly recommend you to password protect your backup.

12. On the Backup Summary page review all parameters of the operation and modify them if necessary. Click the Next button to start the backup process.

This operation can also be accomplished with our recovery media.

Creating a differential to a full partition backup

To update an image of the selected partition, please do the following:

1. Enable the Legacy features view.
2. Click the **Backup & Restore** tab on the Ribbon Panel, then select **Differential Backup**.
3. On the Wizard's Welcome page, click the Next button.
4. On the Browse for Archive page, specify the required full (base) partition archive:

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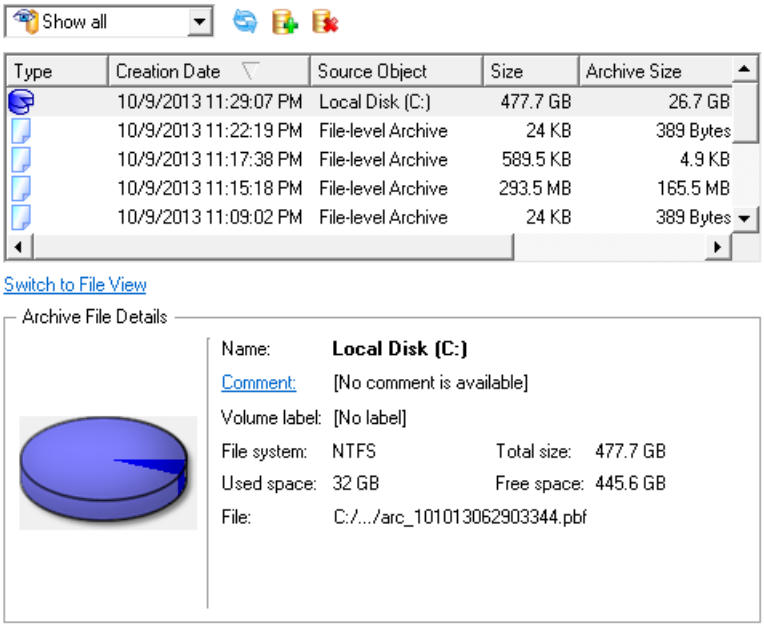
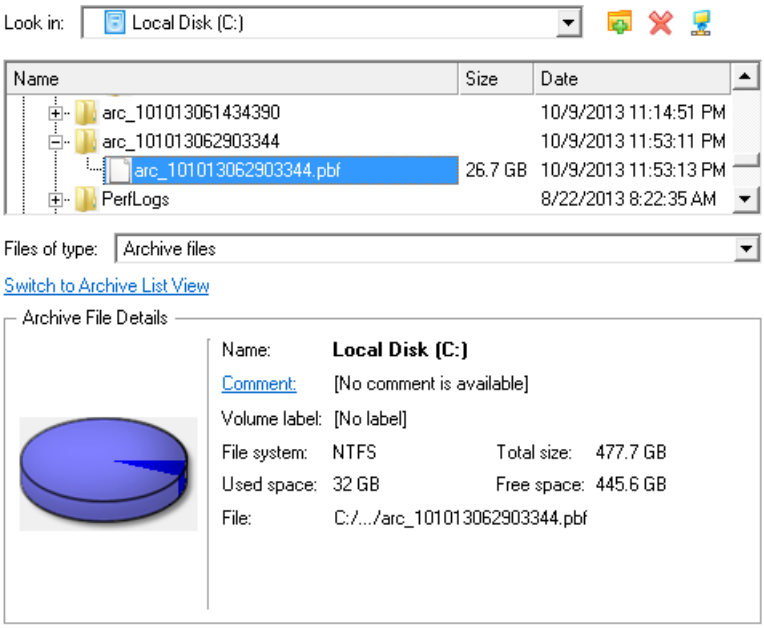
- By clicking the **Switch to Archive List View** link, you can see a list of images contained in the Archive Database (if any).


Show all
Type
Creation Date
Source Object
Size
Archive Size
10/9/2013 11:29:07 PM Local Disk (C:) 477.7 GB 26.7 GB
10/9/2013 11:22:19 PM File-level Archive 24 KB 389 Bytes
10/9/2013 11:17:38 PM File-level Archive 589.5 KB 4.9 KB
10/9/2013 11:15:18 PM File-level Archive 293.5 MB 165.5 MB
10/9/2013 11:09:02 PM File-level Archive 24 KB 389 Bytes
Switch to File View
Archive File Details
Name: Local Disk (C:)
Comment: [No comment is available]
Volume label: [No label]
File system: NTFS
Total size: 477.7 GB
Used space: 32 GB
Free space: 445.6 GB
File: C:/.../arc_101013062903344.pbf

To get a clear-cut picture on properties of the required image, just click on it and the section below will (i.e. Archive File Details) display a short description.

To know more on the subject, please consult the Viewing Image Properties chapter.

- By clicking the **Switch to File View** link, you can find the required image in the browser-like window. The section below (i.e. Archive File Details) will also display a short description of the selected image.



To know more on the subject, please consult the Viewing Image Properties chapter.

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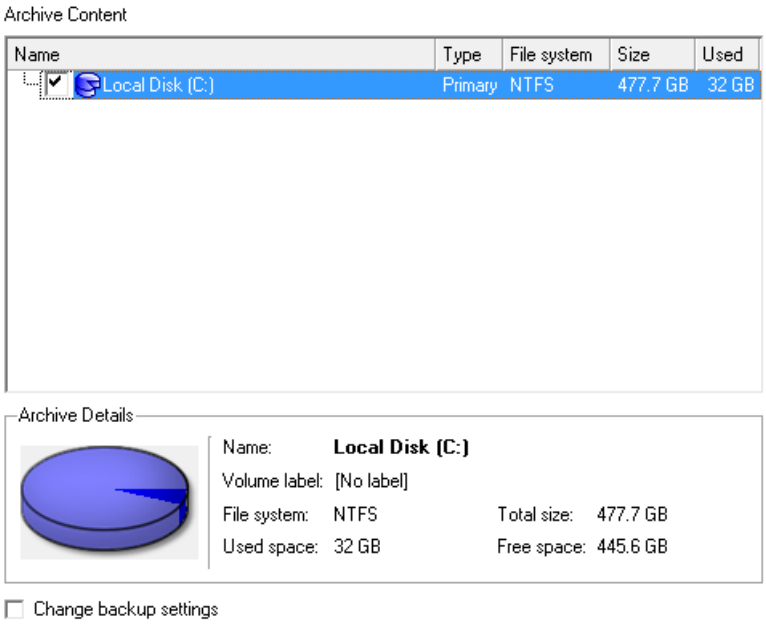
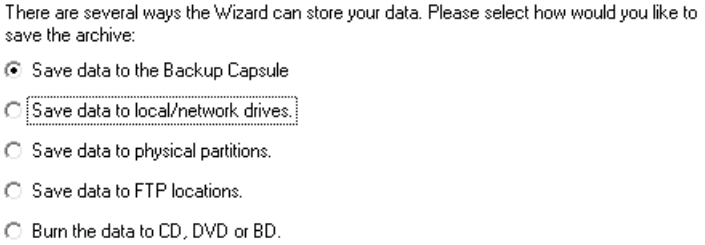
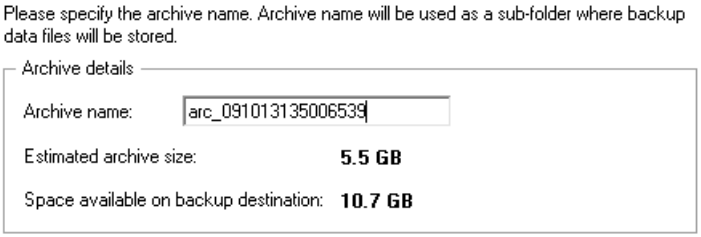
5. The Archive Content page displays detailed information about the contents of the archive. It includes a full description of properties about the partition. In addition, there is the possibility to modify backup settings. To activate the advance mode, you need to mark the appropriate option at the foot of the page.



6. On the Backup Destination page, select where you want to place your backup image.

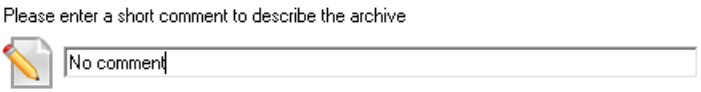

There are several ways the Wizard can store your data. Please select how would you like to save the archive:
Save data to the Backup Capsule
Save data to local/network drives.
Save data to physical partitions.
Save data to FTP locations.
Burn the data to CD, DVD or BD.

7. Edit the archive name if necessary.


Please specify the archive name. Archive name will be used as a sub-folder where backup data files will be stored.
Archive details
Archive name:
arc_091013135006539
Estimated archive size:
5.5 GB
Space available on backup destination:
10.7 GB

Please take into account values of the parameters Estimated archive size and Space available on backup destination - if the archive size exceeds the available space, another drive needs to be selected.

8. Add comments to your backup describing its contents;



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9. On the Backup Summary page review all parameters of the operation and modify them if necessary. Click the Next button to start the backup process.

After the operation is completed you receive a differential backup of the selected partition. It is placed into the specified destination (a local or network disk, the Backup Capsule or a CD/DVD disc), its features defined by the wizard.

This operation can also be accomplished with our recovery media.

Creating a sector increment to a full partition backup

Before you start, please take into account the following issues:

- You should have a full backup of the new type (with a .pfi index file). Any of our flagship products since Backup & Recovery 12 supports this functionality;
- Increments can only be created for full archives stored on a local mounted drive or a network share;
- Increments will be stored together with the corresponding full archive;
- Increments cannot be created for archives of entire GPT disks;
- Increments can only be restored under Windows (if no restart is needed) or WinPE;
- Increments can only be used with our software;
- Increment cannot be encrypted, compressed, or splitted;
- Increments cannot be browsed in Volume Explorer.

To know more on the subject, please consult the Basic Concepts section.

To update an image of the selected partition, please do the following:

1. Enable the Legacy features view.
2. Click the **Backup & Restore** tab on the Ribbon Panel, then select **Incremental Backup**.
3. On the Wizard's Welcome page, click the Next button.
4. On the Browse for Archive page, specify the required full (base) partition archive:
    - By clicking the **Switch to Archive List View** link, you can see a list of images contained in the Archive Database (if any). Please note that only sector-based images of the new type (with a .pfi index file) are available to work with.

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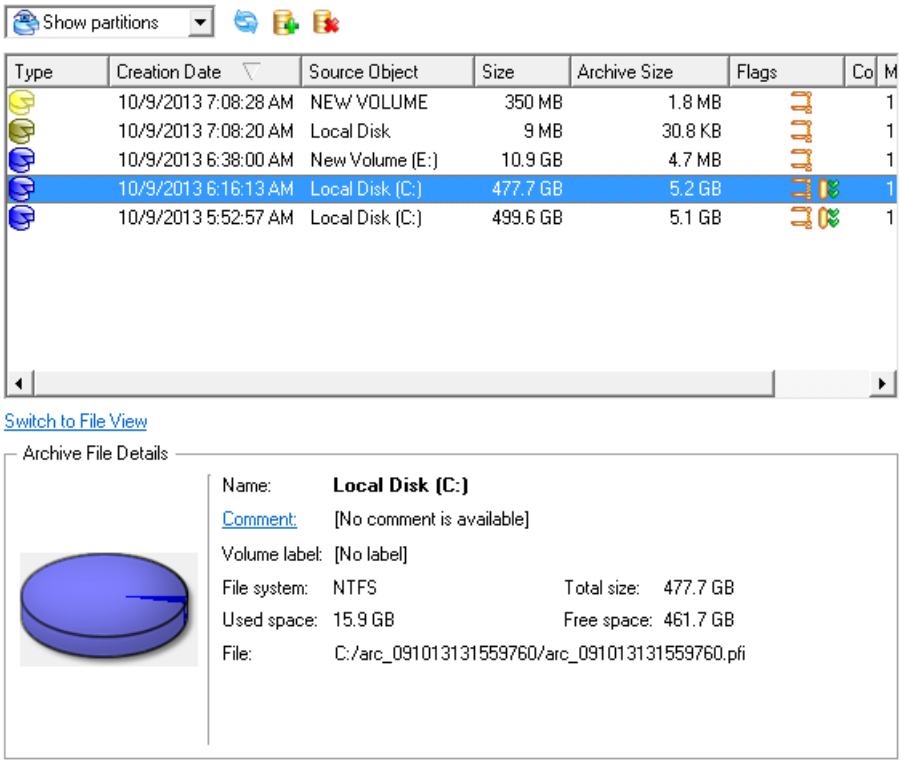
Show partitions
Type
Creation Date
Source Object
Size
Archive Size
Flags
Co
M
10/9/2013 7:08:28 AM NEW VOLUME 350 MB 1.8 MB 1
10/9/2013 7:08:20 AM Local Disk 9 MB 30.8 KB 1
10/9/2013 6:38:00 AM New Volume (E:) 10.9 GB 4.7 MB 1
10/9/2013 6:16:13 AM Local Disk (C:) 477.7 GB 5.2 GB 1
10/9/2013 5:52:57 AM Local Disk (C:) 499.6 GB 5.1 GB 1
Switch to File View
Archive File Details
Name: Local Disk (C:)
Comment: [No comment is available]
Volume label: [No label]
File system: NTFS
Total size: 477.7 GB
Used space: 15.9 GB
Free space: 461.7 GB
File: C:/arc_091013131559760/arc_091013131559760.pfi

To get a clear-cut picture on properties of the required image, just click on it and the section below will (i.e. Archive File Details) display a short description.

To know more on the subject, please consult the Viewing Image Properties chapter.

- By clicking the **Switch to File View** link, you can find the required image in the browser-like window. The section below (i.e. Archive File Details) will also display a short description of the selected image. Please note that only sector-based images of the new type (with a .pfi index file) are available to work with.

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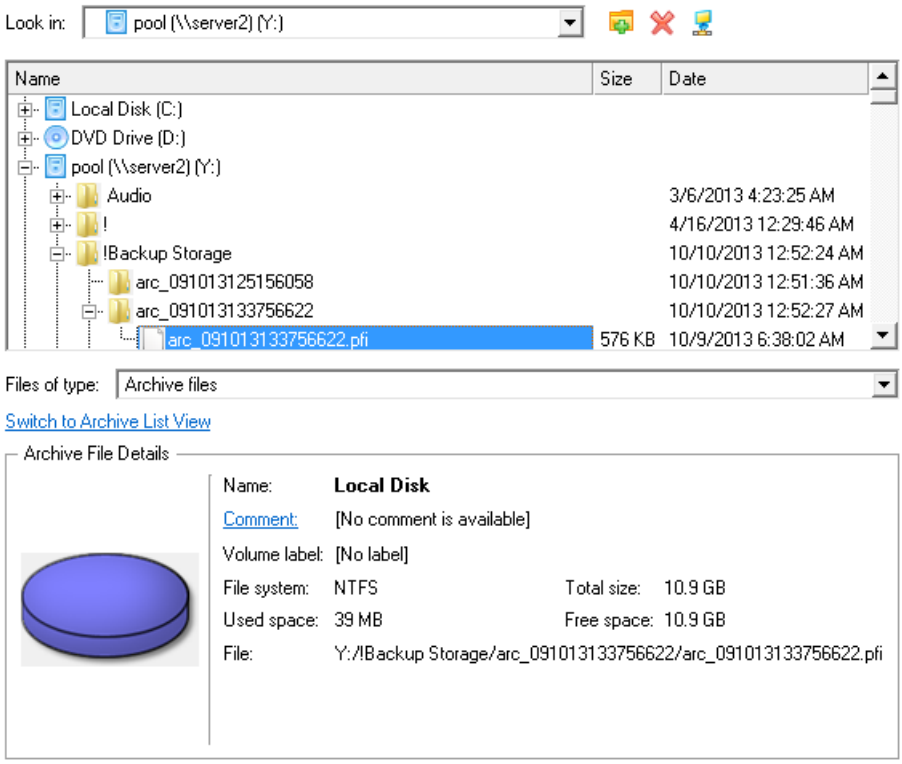
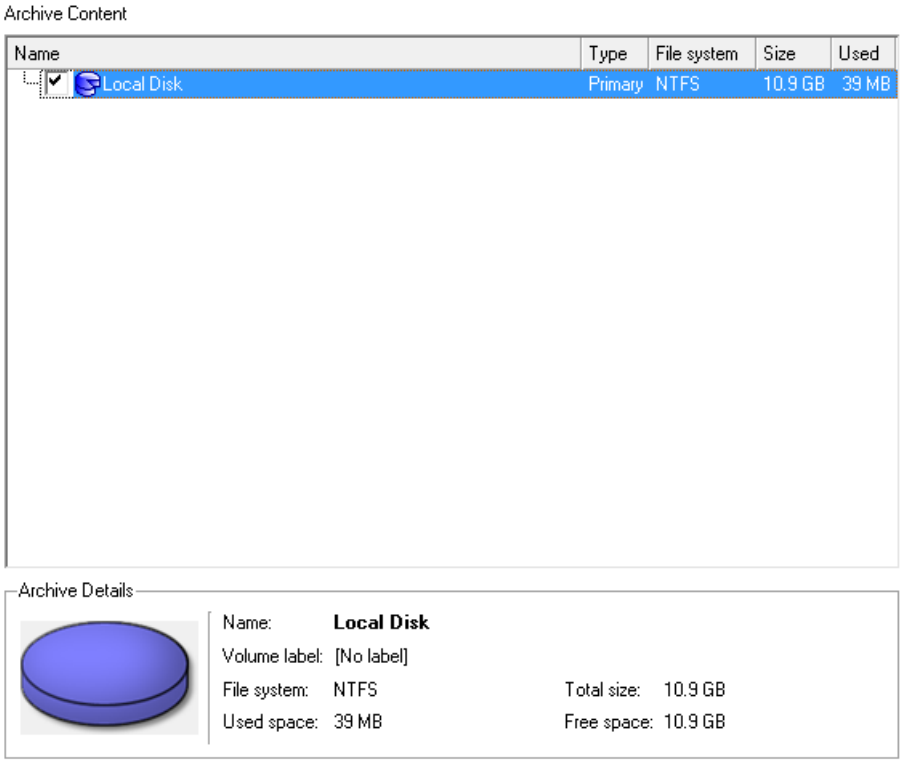


To know more on the subject, please consult the Viewing Image Properties chapter.

5. The Archive Content page displays detailed information about the contents of the archive.



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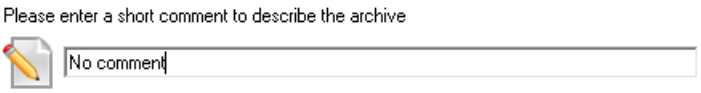
Advanced backup settings are unavailable for sector-based increments due to the usage of the new image container (.pVHD).

6. Add comments to your backup describing its contents;



7. On the Backup Summary page review all parameters of the operation and modify them if necessary. Click the Next button to start the backup process.

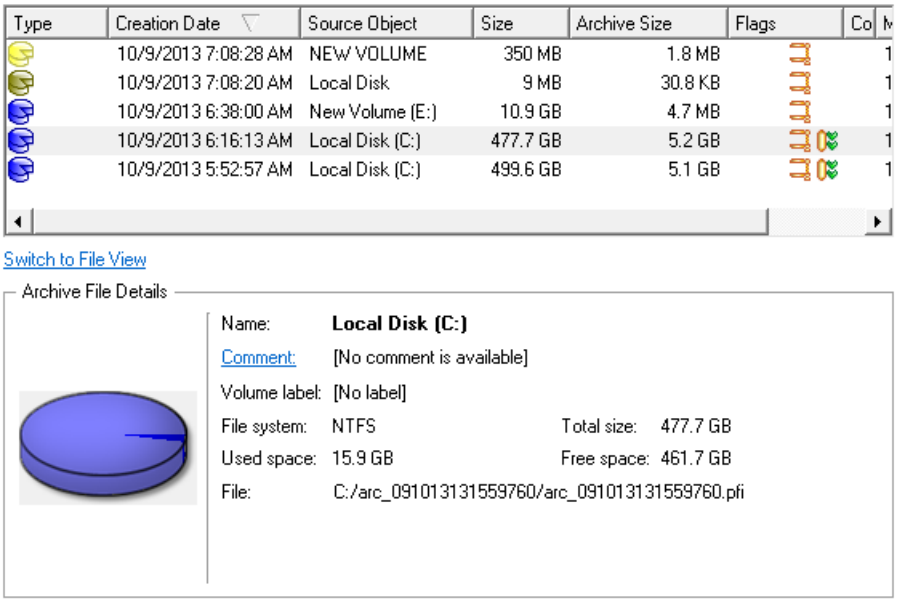
After the operation is completed you receive an incremental update to the selected backup image, placed next to the base image.

This operation can also be accomplished with the WinPE recovery media.

Creating a file increment to a full partition backup

To update only files you need since the last full partition backup, please do the following:

1. Enable the Legacy features view.
2. Click the **Backup & Restore** tab on the Ribbon Panel, then select **Create File Complement**.
3. On the Wizard's Welcome page, click the Next button.
4. On the Browse for Archive page, specify the required full (base) partition archive:
   - By clicking the **Switch to Archive List View** link, you can see a list of images contained in the Archive Database (if any).


Type
Creation Date
Source Object
Size
Archive Size
Flags
Co
10/9/2013 7:08:28 AM NEW VOLUME 350 MB 1.8 MB
10/9/2013 7:08:20 AM Local Disk 9 MB 30.8 KB
10/9/2013 6:38:00 AM New Volume (E:) 10.9 GB 4.7 MB
10/9/2013 6:16:13 AM Local Disk (C:) 477.7 GB 5.2 GB
10/9/2013 5:52:57 AM Local Disk (C:) 499.6 GB 5.1 GB
Switch to File View
Archive File Details
Name: Local Disk (C:)
Comment: [No comment is available]
Volume label: [No label]
File system: NTFS
Total size: 477.7 GB
Used space: 15.9 GB
Free space: 461.7 GB
File: C:/arc_091013131559760/arc_091013131559760.pfi

To get a clear-cut picture on properties of the required image, just click on it and the section below will (i.e. Archive File Details) display a short description.

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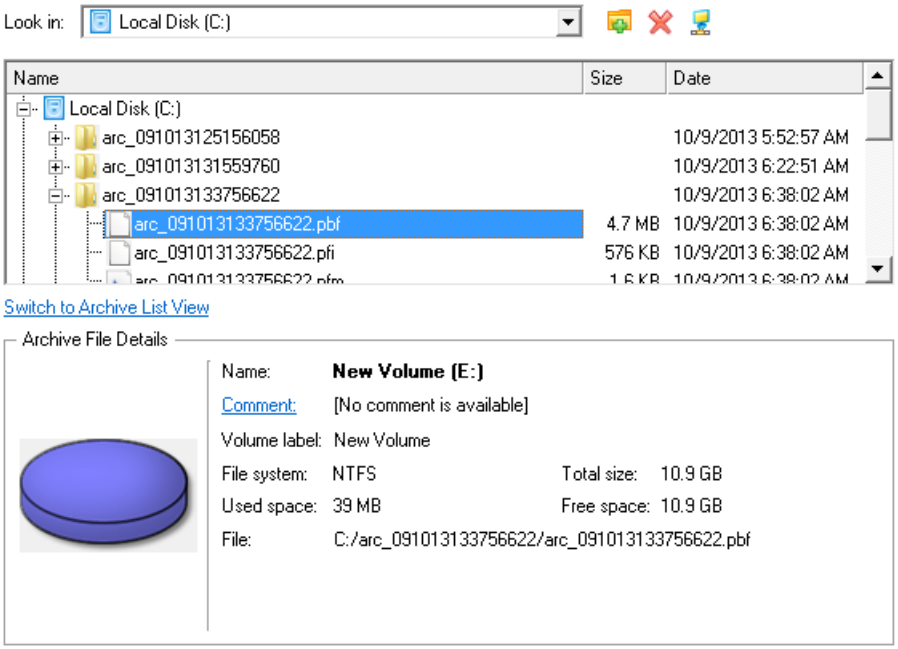
To know more on the subject, please consult the Viewing Image Properties chapter.

- By clicking the **Switch to File View** link, you can find the required image in the browser-like window. The section below (i.e. Archive File Details) will also display a short description of the selected image.



To know more on the subject, please consult the Viewing Image Properties chapter.

5. On the What folders and files to back up page you can see contents of the selected partition archive. Mark a checkbox opposite a file or folder to build up contents of the future incremental image.

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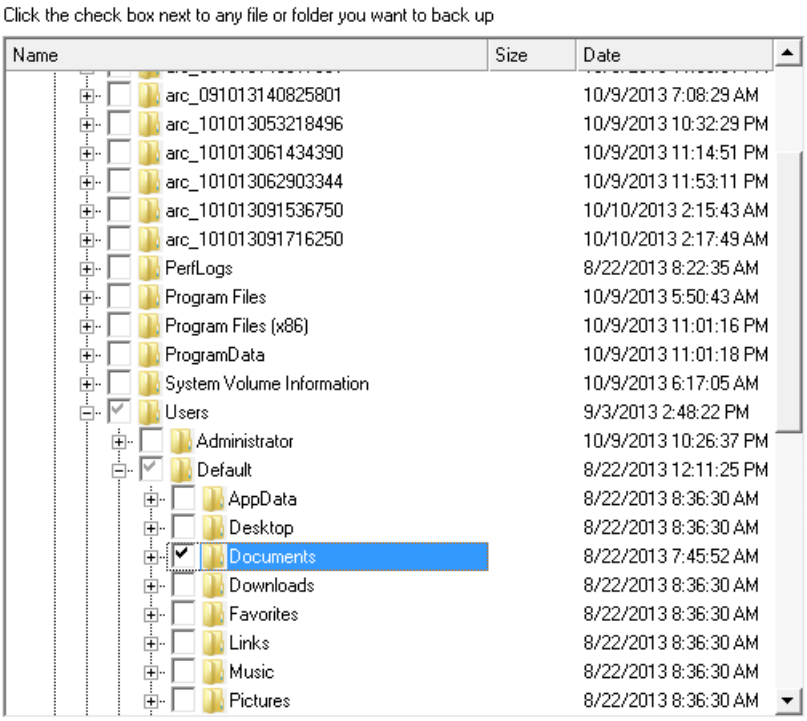
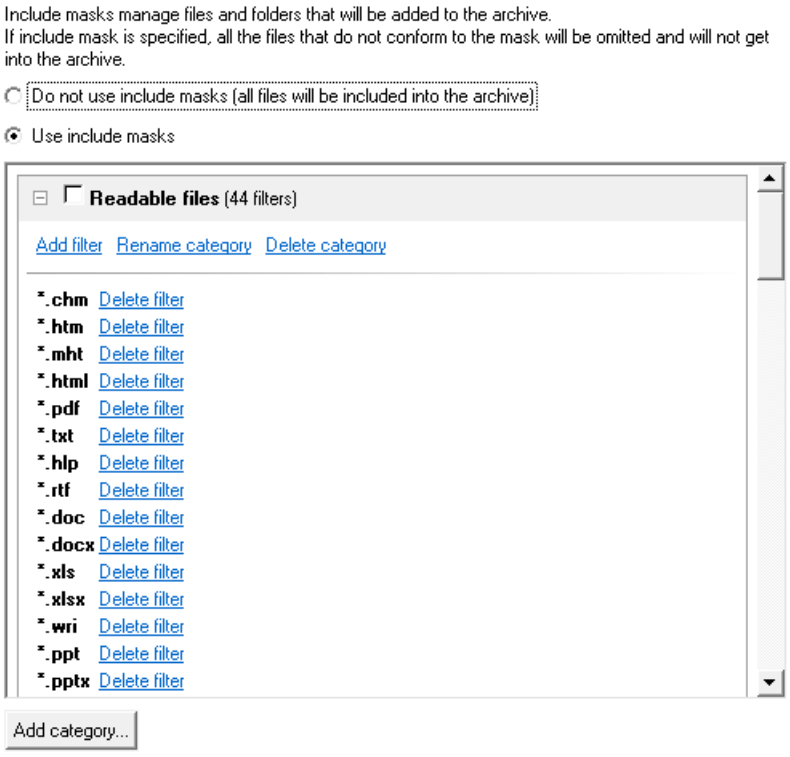


6. **Specify include masks**. The program includes a lot of ready-made filters to effectively control contents of your backup images.


Include masks manage files and folders that will be added to the archive.
If include mask is specified, all the files that do not conform to the mask will be omitted and will not get into the archive.
Do not use include masks (all files will be included into the archive)
Use include masks
Readable files (44 filters)
Add filter
Rename category
Delete category
*.chm Delete filter
*.htm Delete filter
*.mht Delete filter
*.html Delete filter
*.pdf Delete filter
*.txt Delete filter
*.hlp Delete filter
*.rtf Delete filter
*.doc Delete filter
*.docx Delete filter
*.xls Delete filter
*.xlsx Delete filter
*.wri Delete filter
*.ppt Delete filter
*.pptx Delete filter
Add category...

You can also create your own filter by clicking the **Add category…** button.

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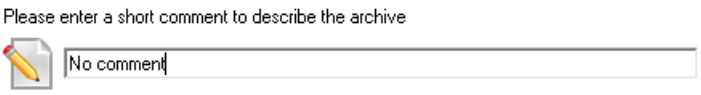
- **Name**. Give to the filter any name you like, but try to use an informative one;
- **Filter**. Press the Browse button to select files or folders you would like to be included or specify a filter mask by using * or ? wildcards;
- **Description**. Add a short description to the filter not to miss it up later.

Click the OK button and you will get a new item on the list of filters. By marking/unmarking a checkbox opposite its name you can choose whether to use it or not.

By setting an include mask, you automatically ignore files that do not match to it, thus they won't be added to the backup image.

7. **Specify exclude masks**. The program includes a lot of ready-made filters to effectively control contents of your backup images.

8. Add comments to your backup describing its contents.



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9. On the Backup Summary page review all parameters of the operation and modify them if necessary. Click the Next button to start the backup process.

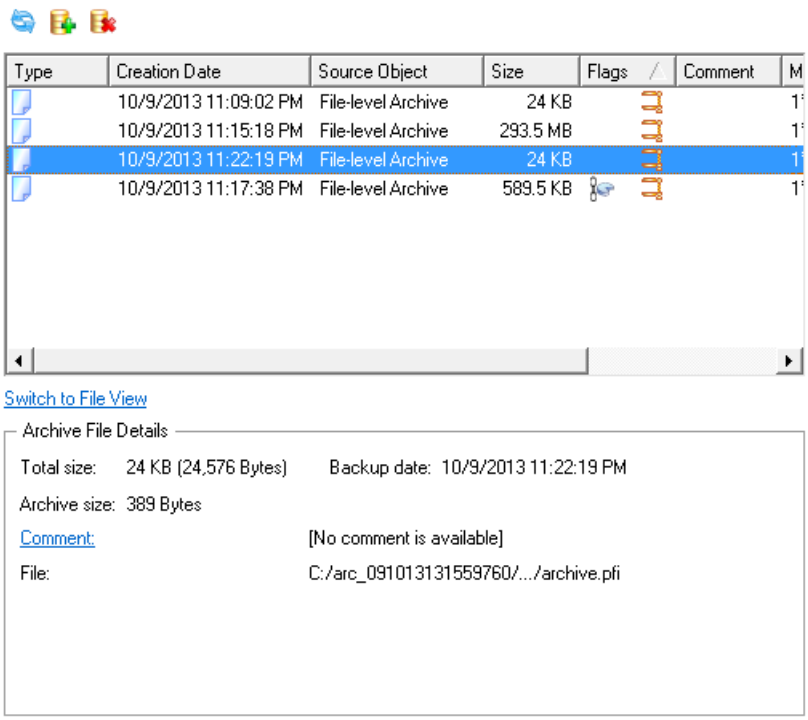
After the operation is completed you receive an incremental backup of the selected partition archive containing information specified in the wizard. It is placed into the same destination as the base image.

This operation can also be accomplished with our recovery media.

Creating an increment to a full file backup

To update a file backup, please do the following:

1. Enable the Legacy features view.
2. Click the **Backup & Restore** tab on the Ribbon Panel, then select **Create Incremental File Archive**.
3. On the Wizard's Welcome page, click the Next button.
4. On the Browse for Archive page, specify the required full (base) file archive:
   - By clicking the **Switch to Archive List View** link, you can see a list of images contained in the Archive Database (if any).



To get a clear-cut picture on properties of the required image, just click on it and the section below will (i.e. Archive File Details) display a short description.

To know more on the subject, please consult the Viewing Image Properties chapter.

   - By clicking the **Switch to File View** link, you can find the required image in the browser-like window. The section below (i.e. Archive File Details) will also display a short description of the selected image.

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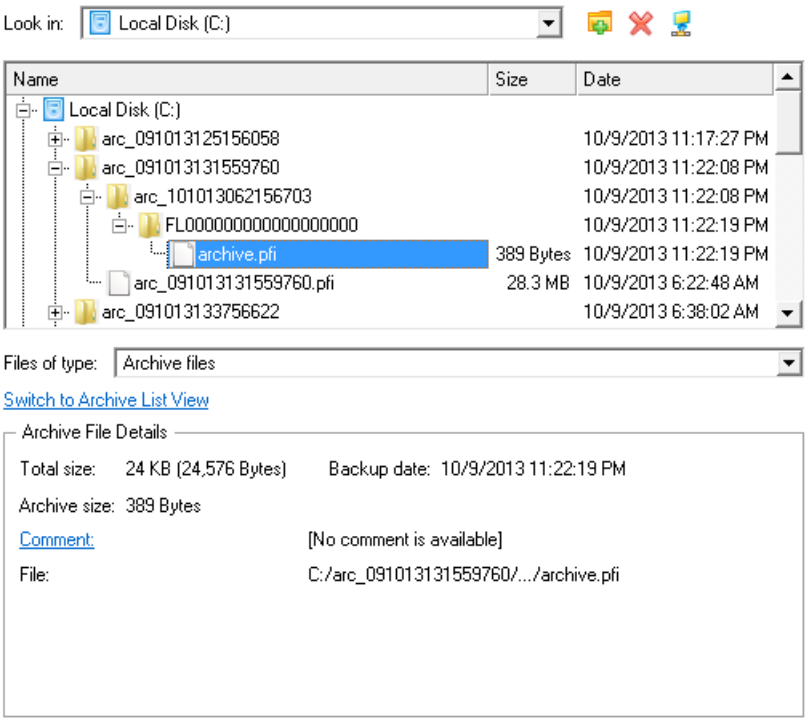

To know more on the subject, please consult the Viewing Image Properties chapter.

After the operation is completed you receive an incremental backup of the selected file archive. It is placed into the same destination as the base image.

This operation can also be accomplished with our recovery media.

Creating a cyclic partition backup

To automate the partition backup process, please do the following:

1. Enable the Legacy features view.
2. Click the **Backup & Restore** tab on the Ribbon Panel, then select **Cyclic Backup**.
3. On the Wizard's Welcome page, click the Next button;
4. On the What to back up page, select a partition you want to make a cyclic backup of;

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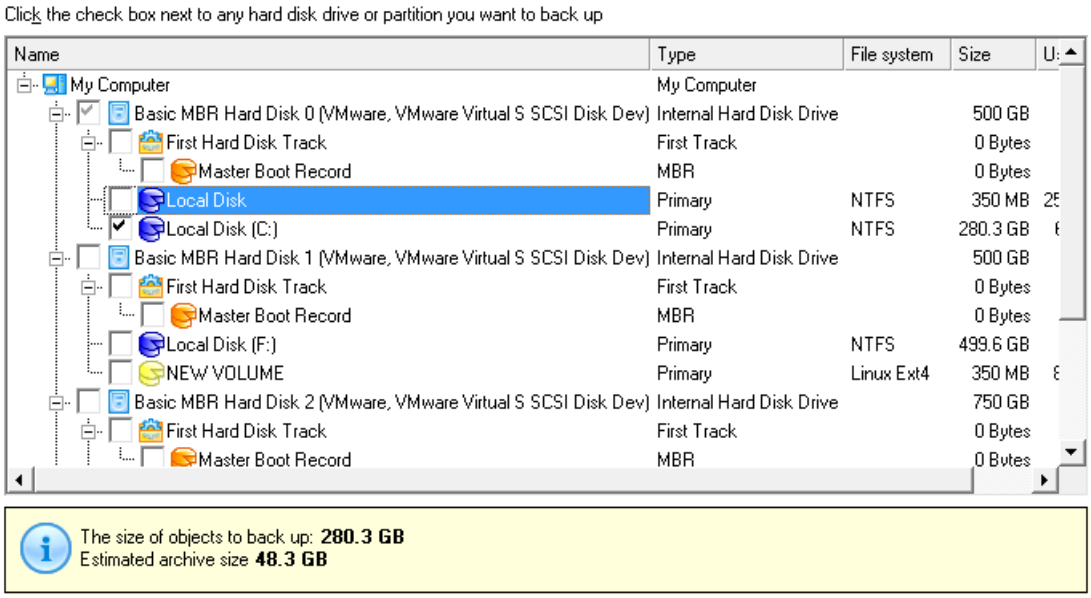
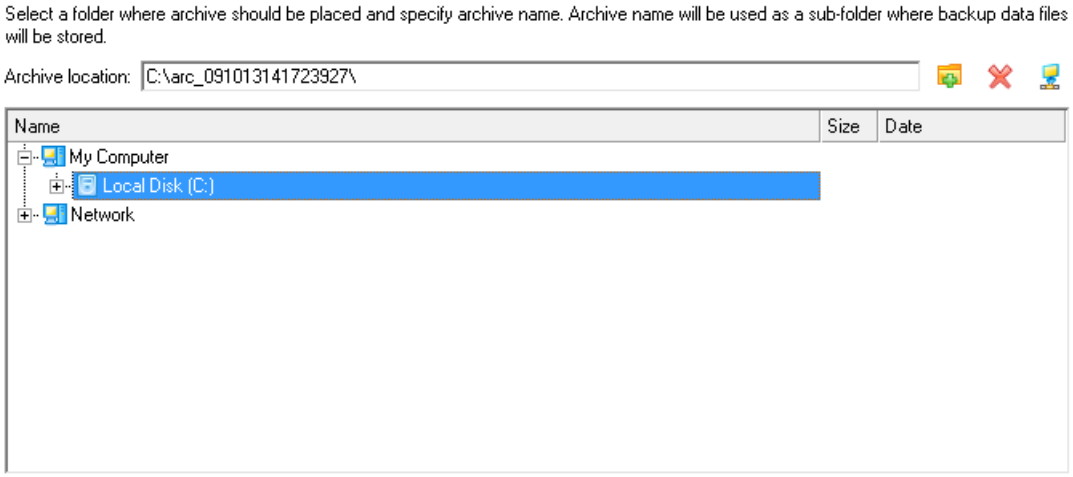
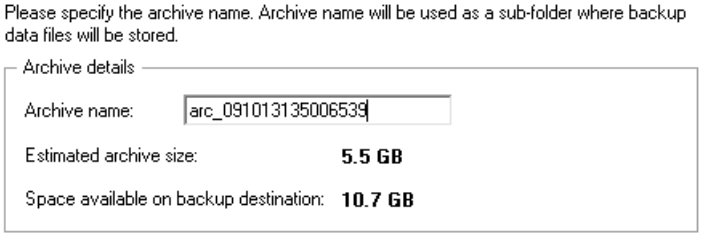


The current version of the program enables to make a cyclic backup of only one partition at a time.

5. On the Backup Destination page, select a mounted/unmounted partition, a network share, or an FTP server to place backup images to.


Select a folder where archive should be placed and specify archive name. Archive name will be used as a sub-folder where backup data files will be stored.
Archive location:
C:\arc_091013141723927\
Name
Size
Date
My Computer
Local Disk (C:)
Network

6. Edit the archive name if necessary.


Please specify the archive name. Archive name will be used as a sub-folder where backup data files will be stored.
Archive details
Archive name:
arc_091013135006539
Estimated archive size:
5.5 GB
Space available on backup destination:
10.7 GB

Please take into account values of the parameters Estimated archive size and Space available on backup destination - if the archive size exceeds the available space, another

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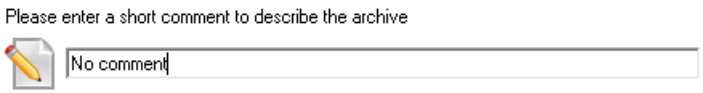
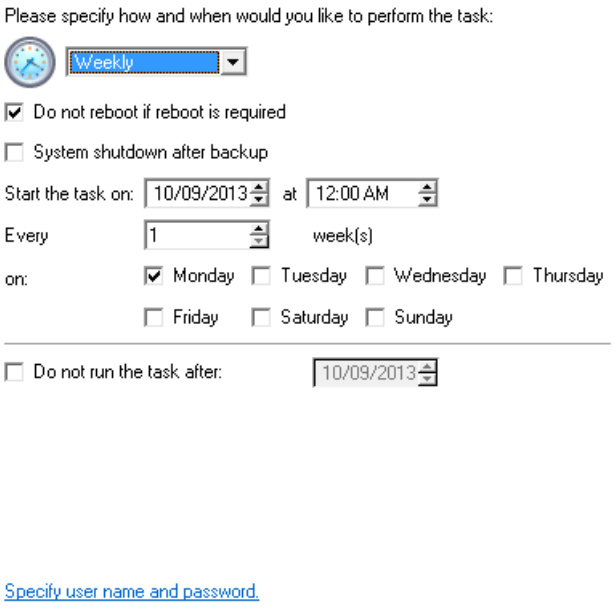
drive needs to be selected.

7. Add comments to your backup describing its contents.

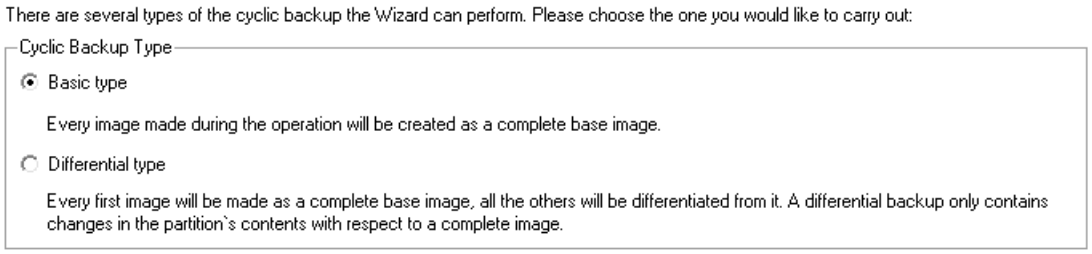


8. Set a timetable for the operation.


Please specify how and when would you like to perform the task:
Weekly
Do not reboot if reboot is required
System shutdown after backup
Start the task on: 10/09/2013 at 12:00 AM
Every 1 week(s)
on: Monday Tuesday Wednesday Thursday
Friday Saturday Sunday
Do not run the task after: 10/09/2013
Specify user name and password.

To know more on the subject, please consult the Task Scheduling chapter.

9. On the Cyclic backup type page, choose the way of creating a cyclic backup:


There are several types of the cyclic backup the Wizard can perform. Please choose the one you would like to carry out:
Cyclic Backup Type
Basic type
Every image made during the operation will be created as a complete base image.
Differential type
Every first image will be made as a complete base image, all the others will be differentiated from it. A differential backup only contains changes in the partition`s contents with respect to a complete image.

- **Base type**. Every image created during the operation will be made as a full archive.
- **Differential type**. Every first image will be made as a full (base) archive and all the others will be differentiated from it. This operation requires much less space, thus considerably saving your system resources.

By setting the **Maximum disk space to store images** and the **Maximum number of images to store** parameters you may define when the operation will be cycled. That means that on exceeding these two parameters the oldest archives will be automatically overwritten (if choosing the Differential type only differential images will be overwritten).

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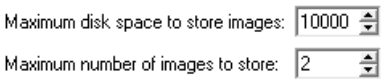


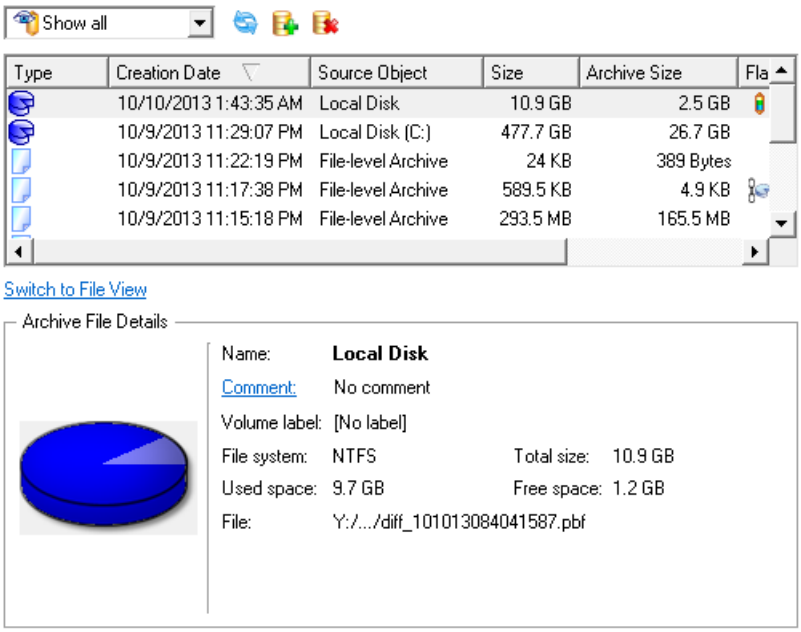
10. On the Backup Summary page review all parameters of the operation and modify them if necessary. Click the Next button to start the backup process.

Merging a full partition backup with one of its differentials

To merge a full partition backup with one of its differentials, thus getting a new full partition archive, please do the following:

1. Enable the Legacy features view.
2. Click the **Backup & Restore** tab on the Ribbon Panel, then select **Synthetic Backup**.
3. On the Wizard's Welcome page, click the Next button.
4. On the Browse for Archive page, you only need to specify the required differential archive. The program then will automatically find its base image:

   - By clicking the **Switch to Archive List View** link, you can see a list of images contained in the Archive Database (if any).


Show all
Type
Creation Date
Source Object
Size
Archive Size
Fla
10/10/2013 1:43:35 AM Local Disk 10.9 GB 2.5 GB
10/9/2013 11:29:07 PM Local Disk (C:) 477.7 GB 26.7 GB
10/9/2013 11:22:19 PM File-level Archive 24 KB 389 Bytes
10/9/2013 11:17:38 PM File-level Archive 589.5 KB 4.9 KB
10/9/2013 11:15:18 PM File-level Archive 293.5 MB 165.5 MB
Switch to File View
Archive File Details
Name: Local Disk
Comment: No comment
Volume label: [No label]
File system: NTFS
Total size: 10.9 GB
Used space: 9.7 GB
Free space: 1.2 GB
File: Y:/.../diff_101013084041587.pbf

   To get a clear-cut picture on properties of the required image, just click on it and the section below will (i.e. Archive File Details) display a short description.

To know more on the subject, please consult the Viewing Image Properties chapter.

   - By clicking the **Switch to File View** link, you can find the required image in the browser-like window. The section below (i.e. Archive File Details) will also display a short description of the selected image.

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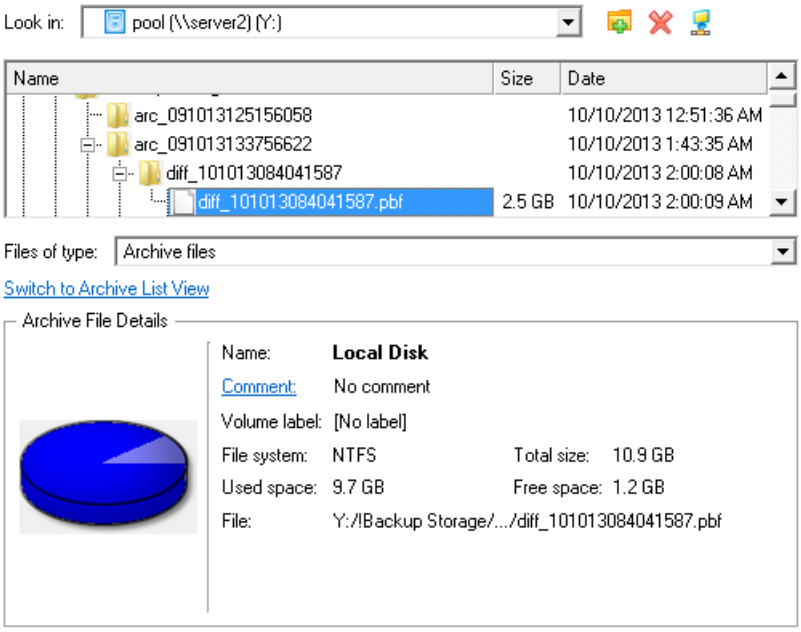
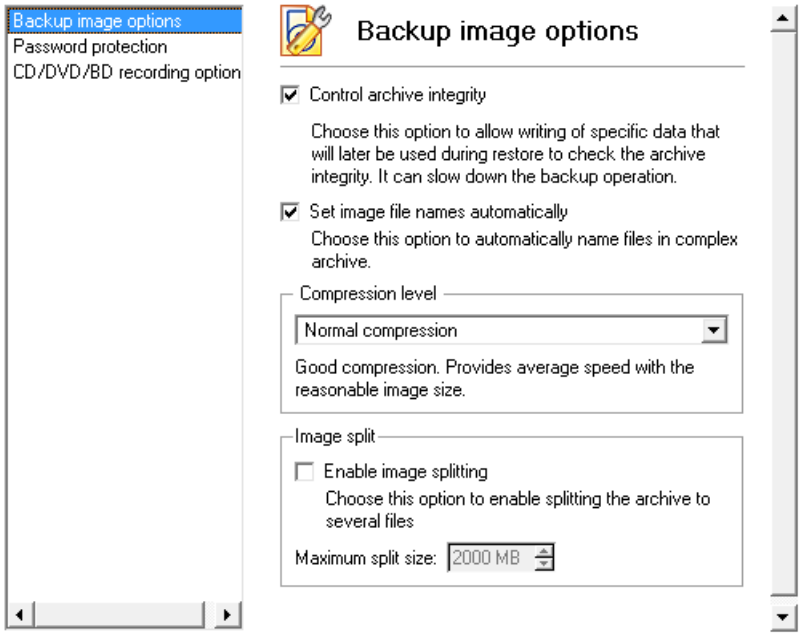


To know more on the subject, please consult the Viewing Image Properties chapter.

5. On the Synthesis Settings page you can additionally modify any property of the selected backup image if necessary. To accomplish our task we have no need to change anything at all.


Backup image options
Password protection
CD/DVD/BD recording option
Backup image options
Control archive integrity
Choose this option to allow writing of specific data that will later be used during restore to check the archive integrity. It can slow down the backup operation.
Set image file names automatically
Choose this option to automatically name files in complex archive.
Compression level
Normal compression
Good compression. Provides average speed with the reasonable image size.
Image split
Enable image splitting
Choose this option to enable splitting the archive to several files
Maximum split size:
2000 MB

6. On the Synthetic Archive Destination page, select where you want to place the resulted backup image.

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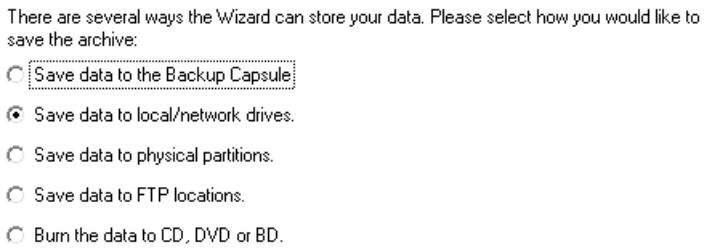
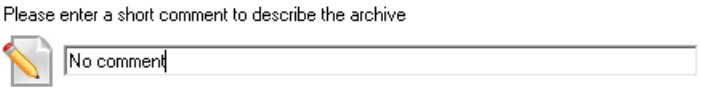

There are several ways the Wizard can store your data. Please select how you would like to save the archive:
Save data to the Backup Capsule
Save data to local/network drives.
Save data to physical partitions.
Save data to FTP locations.
Burn the data to CD, DVD or BD.

7. Edit the archive name if necessary.

Please take into account values of the parameters Estimated archive size and Space available on backup destination - if the archive size exceeds the available space, another drive needs to be selected.

8. Add comments to your backup describing its contents;



9. On the Synthesis Summary page review all parameters of the operation and modify them if necessary. Click the Next button to start the backup process.

After the operation is completed you receive a new full partition archive. It is placed into the specified destination (a local or network disk, or a CD/DVD disc), its features defined by the wizard.

This function is currently unavailable for modification of entire hard disk backups.

This operation can also be accomplished with our recovery media.

Recovery Scenarios

New Backup Format

Restoring an entire hard disk or system partition from network storage

Let's assume that your computer fails to boot because of a virus attack or corruption of some system critical files. But you've got a backup of your hard disk on a remote backup server. That's just enough to easily get your system back on track again.

1. Start up the computer from the WinPE recovery media.

Please use Recovery Media Builder to prepare Paragon's recovery environments on CD/DVD, flash, or in an ISO-image.

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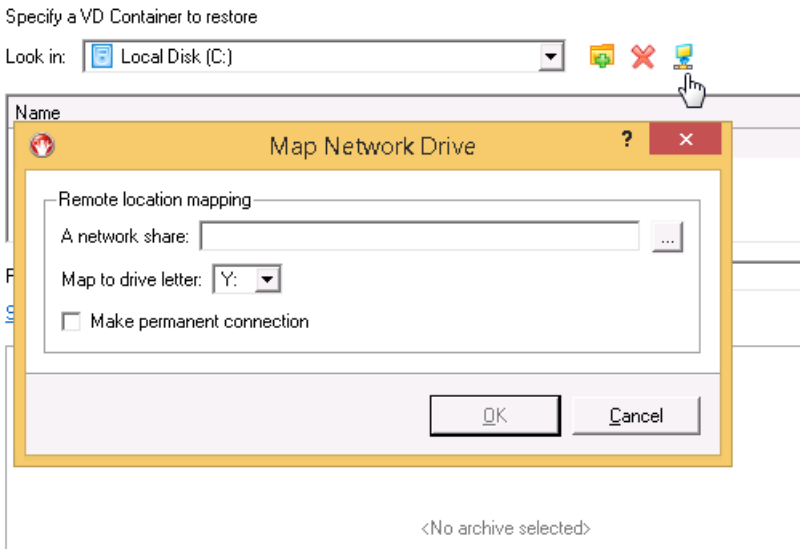
To automatically boot from the recovery media please make sure the on-board BIOS is set up to boot from CD/USB first.

2. Select **Switch to Full Scale Launcher**, then click the **Restore from VD** item of the Wizards menu.
3. On the Wizard's Welcome page, click the Next button.
4. On the Browse for Archive page you need to specify the required backup image:
   - Map a network disk where your archives are placed:

     - Call the Map Network Drive dialog by clicking the appropriate button;



     - Click the standard browse button [...] to browse for the required network share or manually enter a path to it;

     - Define a letter from the pull-down list of available drive letters;

     - Click the **Connect as user** button at the foot of the dialog page to specify a user name and password to access the selected network share if necessary.

You can also map a network disk with Network Configurator.

   - Choose the required archive in the browser-like window. The Archive File Details section displays a short description of the selected image. If you need more information on the selected backup object, please click the corresponding link at the bottom of the section. Click **Next** to proceed.

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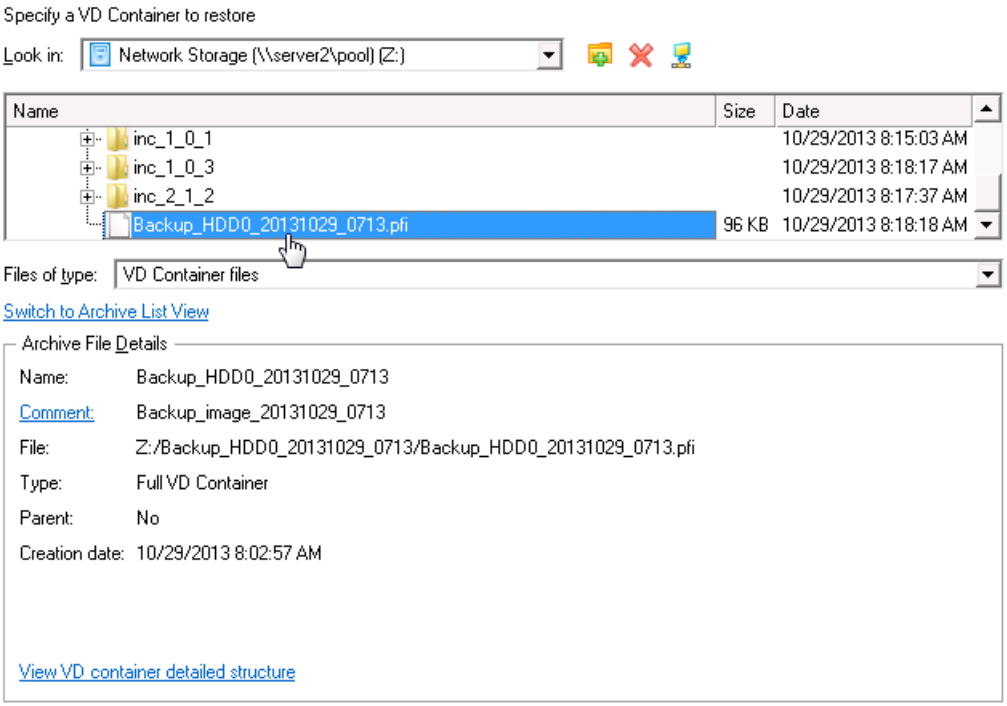
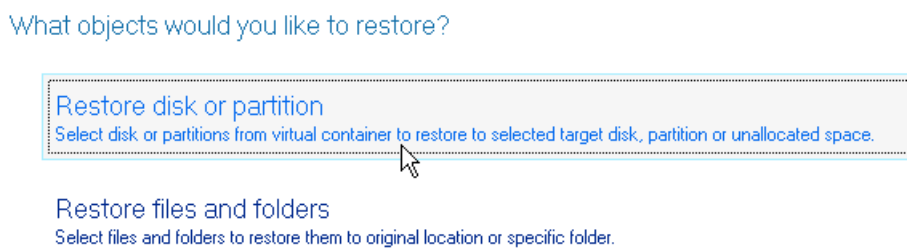


5. Select **Restore disk or partition**.


What objects would you like to restore?
Restore disk or partition
Select disk or partitions from virtual container to restore to selected target disk, partition or unallocated space.
Restore files and folders
Select files and folders to restore them to original location or specific folder.

6. The What to Restore page displays detailed information about the contents of the archive. Select the required item to restore.

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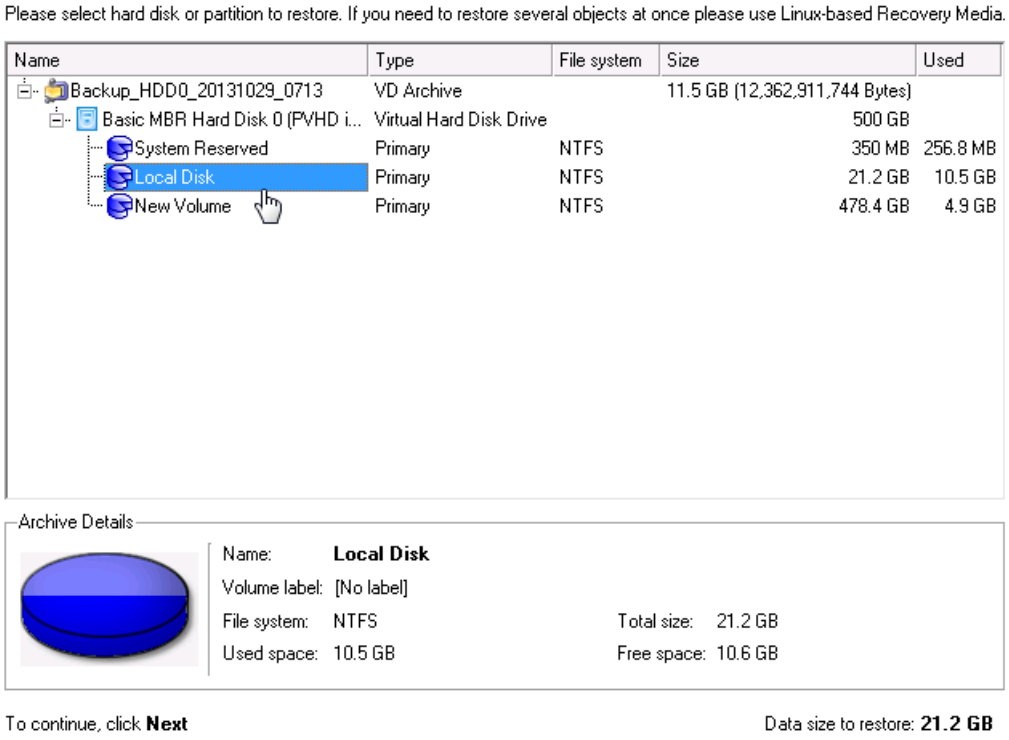
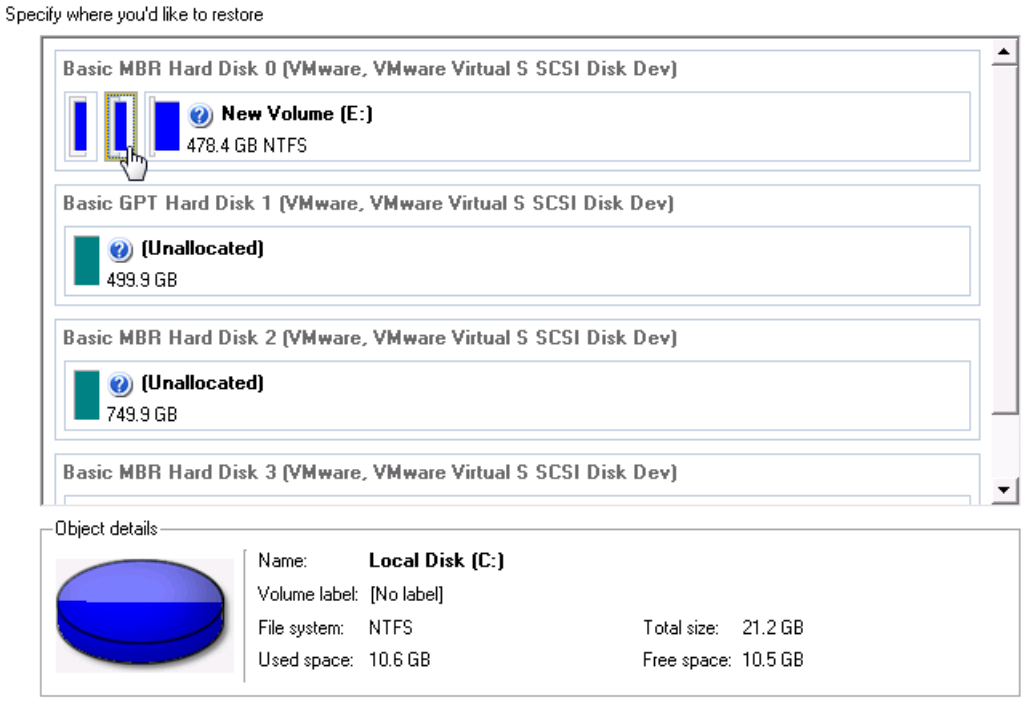


If you need to restore several backup objects in one operation, please use the Linux-based recovery media.

7. On the Where to Restore page specify a hard disk, then one of its partitions to restore the image to (if several in your computer). By default, the program offers to restore the archive exactly where it belongs. That's what we actually need.


Specify where you'd like to restore
Basic MBR Hard Disk 0 (VMware, VMware Virtual S SCSI Disk Dev)
New Volume (E:)
478.4 GB NTFS
Basic GPT Hard Disk 1 (VMware, VMware Virtual S SCSI Disk Dev)
(Unallocated)
499.9 GB
Basic MBR Hard Disk 2 (VMware, VMware Virtual S SCSI Disk Dev)
(Unallocated)
749.9 GB
Basic MBR Hard Disk 3 (VMware, VMware Virtual S SCSI Disk Dev)
Object details
Name: Local Disk (C:)
Volume label: [No label]
File system: NTFS
Total size: 21.2 GB
Used space: 10.6 GB
Free space: 10.5 GB

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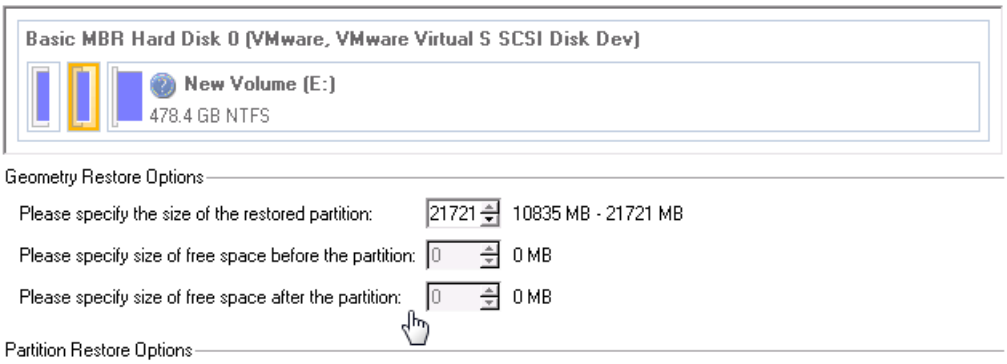
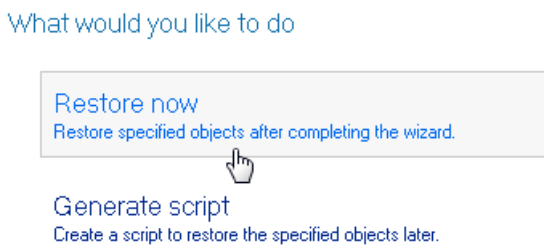
All contents on the partition selected for restoring purposes will be deleted during the operation.

8. On the Restore Results page you can see the resulted disk layout. Besides there's the possibility to change size of the partition and its location if necessary as well as assign a particular drive letter. If you've got to do with a 64-bit Windows configured to the uEFI boot mode, the **Switch EFI to boot from destination drive** option will become available for you to define what instance of Windows OS you'd like to boot from once the operation is over. Anyway you can specify a bootable device at any time through Boot Corrector.


Basic MBR Hard Disk 0 (VMware, VMware Virtual S SCSI Disk Dev)
New Volume (E:)
478.4 GB NTFS
Geometry Restore Options
Please specify the size of the restored partition:
21721
10835 MB - 21721 MB
Please specify size of free space before the partition:
0
0 MB
Please specify size of free space after the partition:
0
0 MB
Partition Restore Options

9. Choose whether to execute the operation immediately after finishing the wizard and applying the pending changes (only if the virtual mode is enabled) or generate a file to execute it later.


What would you like to do
Restore now
Restore specified objects after completing the wizard.
Generate script
Create a script to restore the specified objects later.

10. Click **Finish** to complete the wizard, then apply the pending changes.
11. In the Progress window you can see in real-time a detailed report on all actions carried out by the program. Mark the checkbox at the bottom of the window to automatically switch off the computer on the successful accomplishment of the restore operation.
12. After completing the operation, please reboot the computer.

To make Windows bootable on different hardware, please additionally complete the P2P Adjust OS Wizard.

Restoring individual files and folders

1. Start up the computer from the WinPE recovery media.

Please use Recovery Media Builder to prepare Paragon's recovery environments on CD/DVD, flash, or in an ISO-image.

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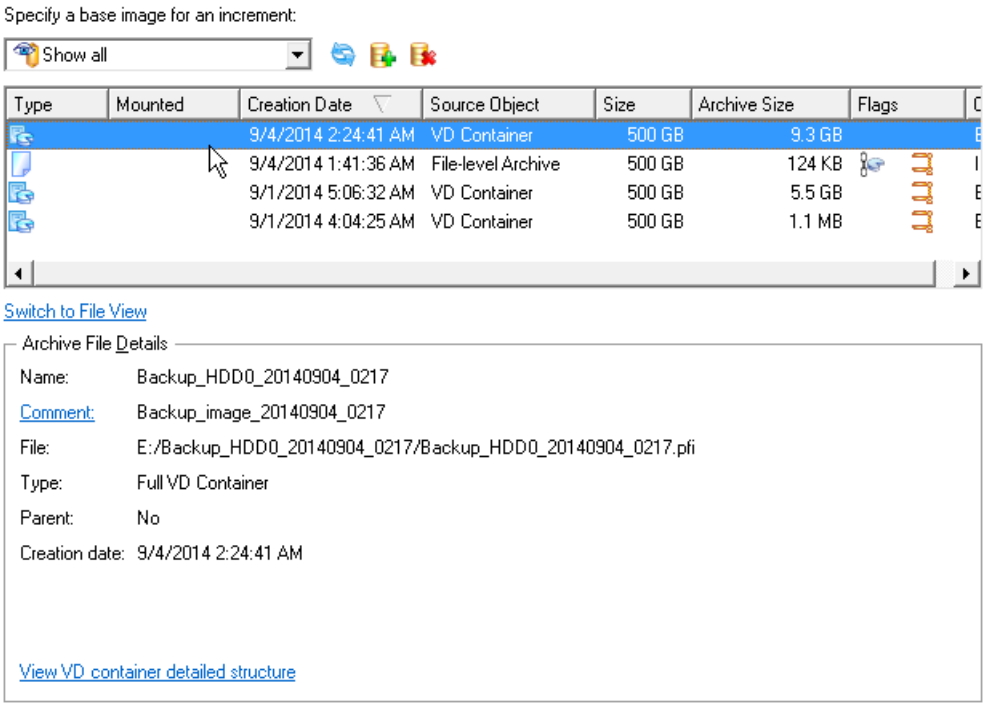
To automatically boot from the recovery media please make sure the on-board BIOS is set up to boot from CD/USB first.

2. Select **Switch to Full Scale Launcher**, then click the **Restore from VD** item of the Wizards menu.
3. On the Wizard's Welcome page, click the Next button.
4. On the Browse for Archive page, specify the required virtual container:
   - By clicking the **Switch to Archive List View** link, you can see a list of images contained in the Archive Database (if any).



To get a clear-cut picture on properties of the required image, just click on it and the section below will (i.e. Archive File Details) display a short description.

To know more on the subject, please consult the Viewing Image Properties chapter.

   - By clicking the **Switch to File View** link, you can find the required image in the browser-like window. The section below (i.e. Archive File Details) will also display a short description of the selected image.

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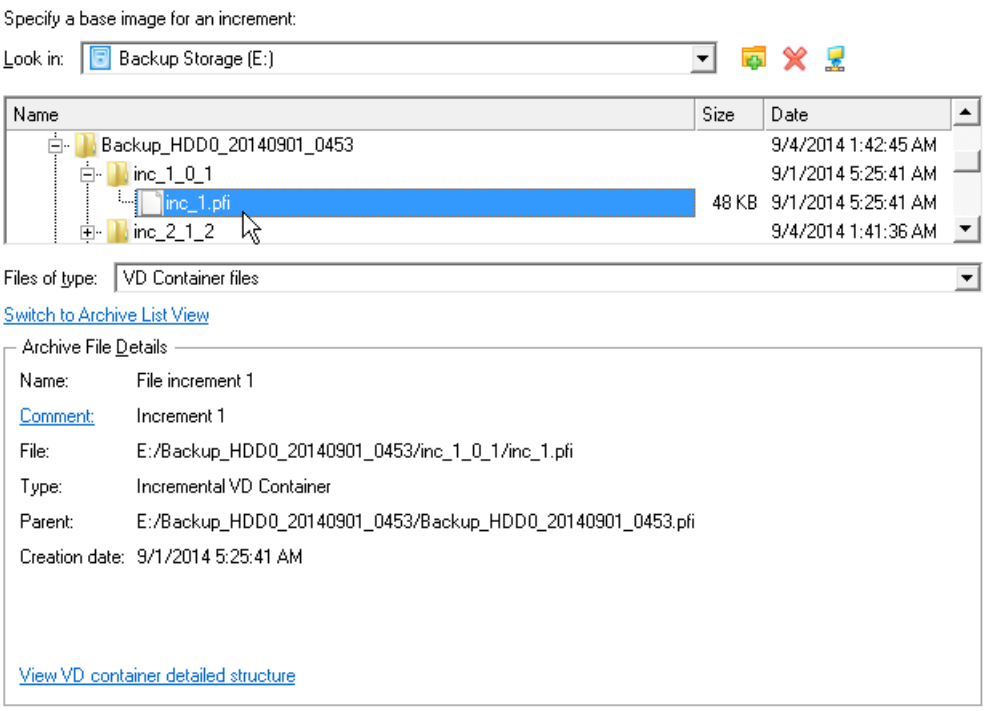
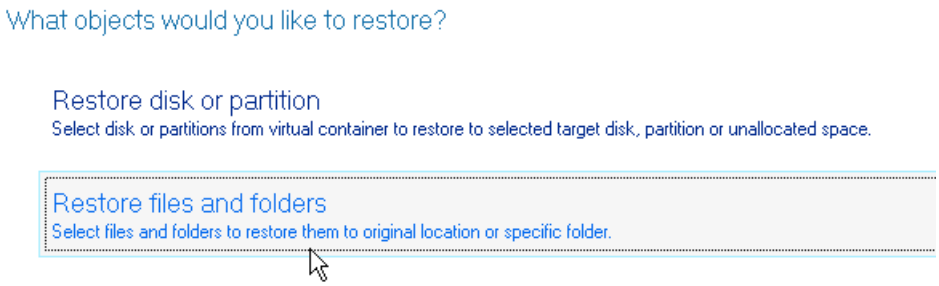


To know more on the subject, please consult the Viewing Image Properties chapter.

5. Select **Restore files and folders**.


What objects would you like to restore?
Restore disk or partition
Select disk or partitions from virtual container to restore to selected target disk, partition or unallocated space.
Restore files and folders
Select files and folders to restore them to original location or specific folder.

6. On the next page specify what you need to extract from the backup by marking checkboxes next to the required data items. At the right lower corner of the window you can see the resulted amount of the selected data.

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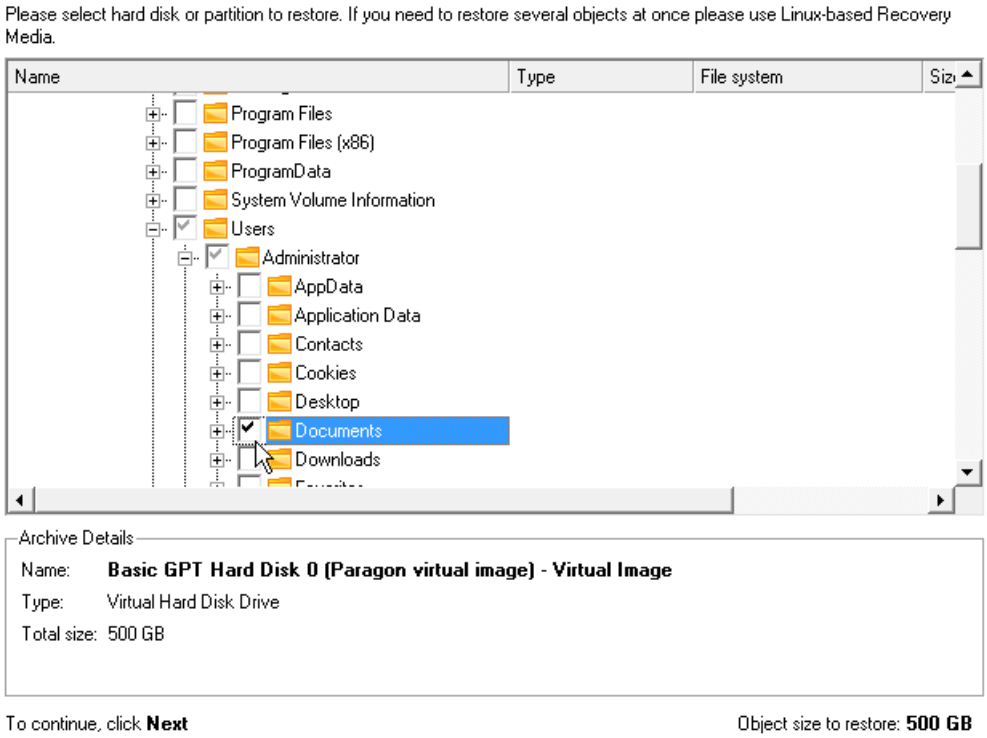
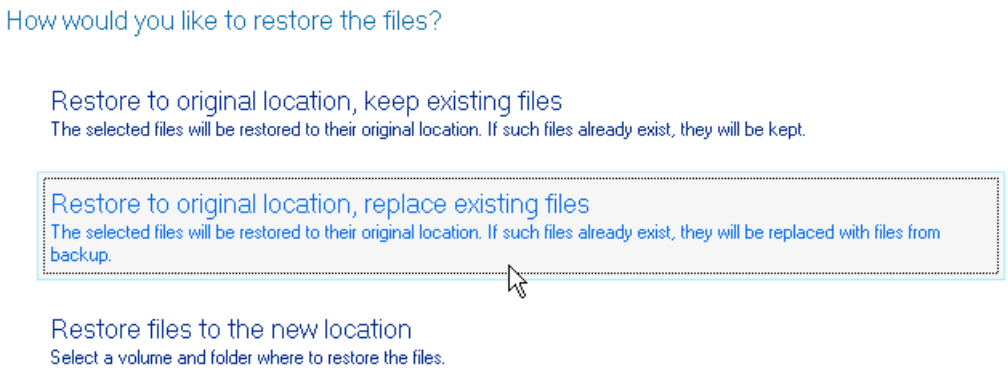
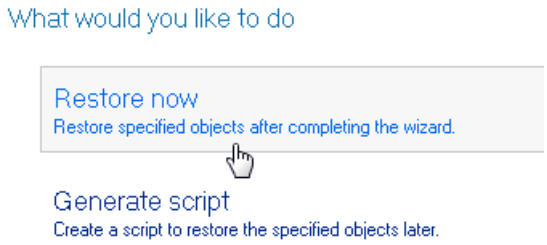


7. Next you need to choose the way the selected data will be restored. In our case we'd rather restore contents of the backup to its original location with replacing existing files as well.


How would you like to restore the files?
Restore to original location, keep existing files
The selected files will be restored to their original location. If such files already exist, they will be kept.
Restore to original location, replace existing files
The selected files will be restored to their original location. If such files already exist, they will be replaced with files from backup.
Restore files to the new location
Select a volume and folder where to restore the files.

8. Choose whether to execute the operation immediately after finishing the wizard and applying the pending changes (only if the virtual mode is enabled) or generate a script file to execute it later.


What would you like to do
Restore now
Restore specified objects after completing the wizard.
Generate script
Create a script to restore the specified objects later.

9. Click **Finish** to complete the wizard, then apply the pending changes.
10. In the Progress window you can see in real-time a detailed report on all actions carried out by the program. Mark the checkbox at the bottom of the window to automatically switch off the computer on the successful accomplishment of the restore operation.

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This operation can also be accomplished under Windows.

Legacy Backup Format

Restoring a hard disk from the bootable Backup Capsule

Let's assume that your computer fails to boot because of a virus attack or corruption of some system critical files. But you've got the bootable backup capsule containing a backup of your hard disk. That's just enough to easily get your system back on track again.

To restore your hard disk from a backup image contained in the backup capsule when the current OS is down, please do the following:

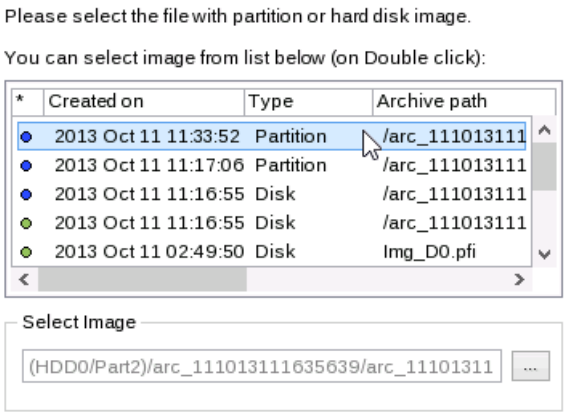
1. Start up the computer from the bootable backup capsule. By default, the program offers to use the F1 hot key to boot from it.

This scenario implies that the backup capsule is bootable.

2. In the boot menu select **Normal Mode** to use the Linux recovery environment (more preferable) or **Safe Mode** to use the PTS DOS recovery environment (in case you've got problems with Linux).

By default the Normal Mode will be automatically initiated after a 10 second idle period.

3. In the Linux launch menu select the Simple Restore Wizard. You can find the same wizard in PTS DOS as well.
4. On the Wizard's Welcome page, click the Next button.
5. On the What to Restore page, you can see a list of available images (if several). Most likely the required archive will be there too. If not, click the standard browse button [...] to find it. When you find your image, double click on it to proceed.


Please select the file with partition or hard disk image.
You can select image from list below (on Double click):
* Created on Type Archive path
2013 Oct 11 11:33:52 Partition /arc_111013111
2013 Oct 11 11:17:06 Partition /arc_111013111
2013 Oct 11 11:16:55 Disk /arc_111013111
2013 Oct 11 11:16:55 Disk /arc_111013111
2013 Oct 11 02:49:50 Disk Img_D0.pfi
Select Image
(HDD0/Part2)/arc_111013111635639/arc_11101311
...

6. On the Image Properties page, make sure that you select the correct image by viewing the provided information about the archive.

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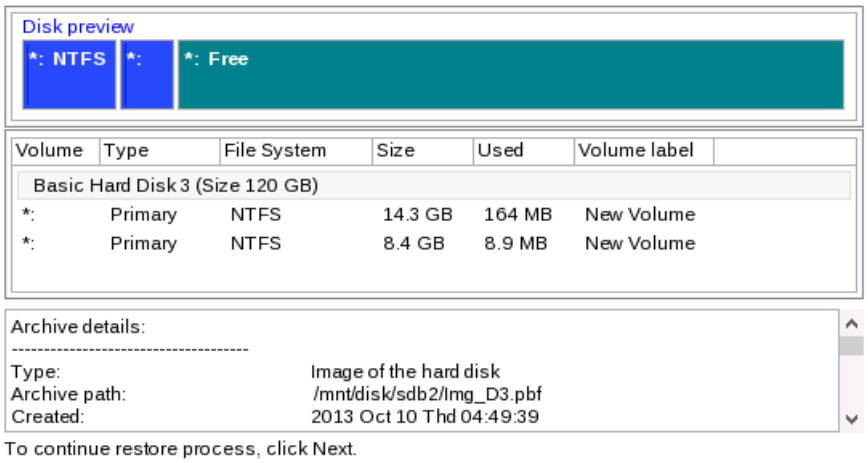
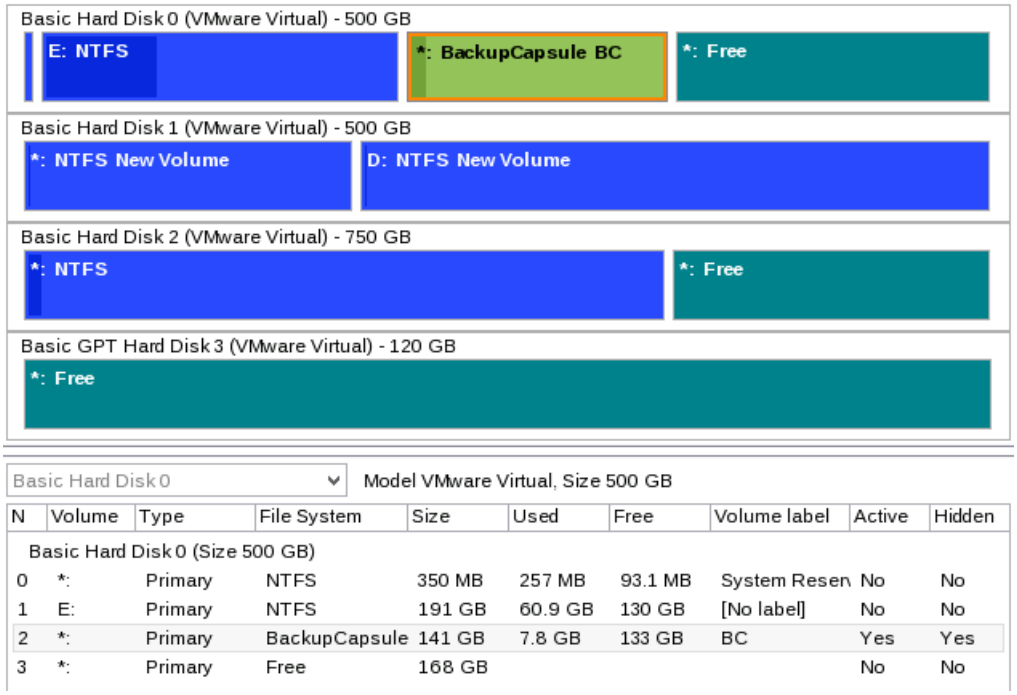

Disk preview
*: NTFS
*:
*: Free
Volume Type File System Size Used Volume label
Basic Hard Disk 3 (Size 120 GB)
*: Primary NTFS 14.3 GB 164 MB New Volume
*: Primary NTFS 8.4 GB 8.9 MB New Volume
Archive details:
Type: Image of the hard disk
Archive path: /mnt/disk/sdb2/Img_D3.pbf
Created: 2013 Oct 10 Thd 04:49:39
To continue restore process, click Next.

7. On the next page specify a hard disk to restore the image to (if several in your computer). By default, the program offers to restore the archive exactly where it belongs. That's what we actually need.


Basic Hard Disk 0 (VMware Virtual) - 500 GB
E: NTFS
*: BackupCapsule BC
*: Free
Basic Hard Disk 1 (VMware Virtual) - 500 GB
*: NTFS New Volume
D: NTFS New Volume
Basic Hard Disk 2 (VMware Virtual) - 750 GB
*: NTFS
*: Free
Basic GPT Hard Disk 3 (VMware Virtual) - 120 GB
*: Free
Basic Hard Disk 0
Model VMware Virtual, Size 500 GB
N Volume Type File System Size Used Free Volume label Active Hidden
Basic Hard Disk 0 (Size 500 GB)
0 *: Primary NTFS 350 MB 257 MB 93.1 MB System Resen No No
1 E: Primary NTFS 191 GB 60.9 GB 130 GB [No label] No No
2 *: Primary BackupCapsule 141 GB 7.8 GB 133 GB BC Yes Yes
3 *: Primary Free 168 GB No No

You can also make the program resize the on-disk partitions proportionally if necessary by marking the appropriate checkbox.

All contents on the disk selected for restoring purposes will be deleted during the operation.

8. On the Restore Summary page you can see your hard disk layout before and after the operation. Click the Next button to initiate the restore process.

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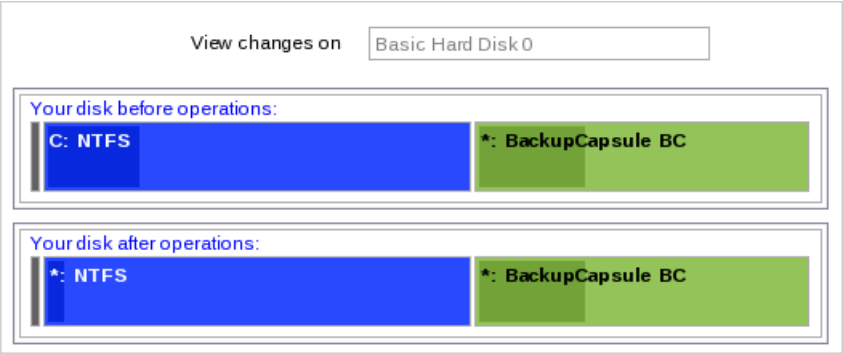
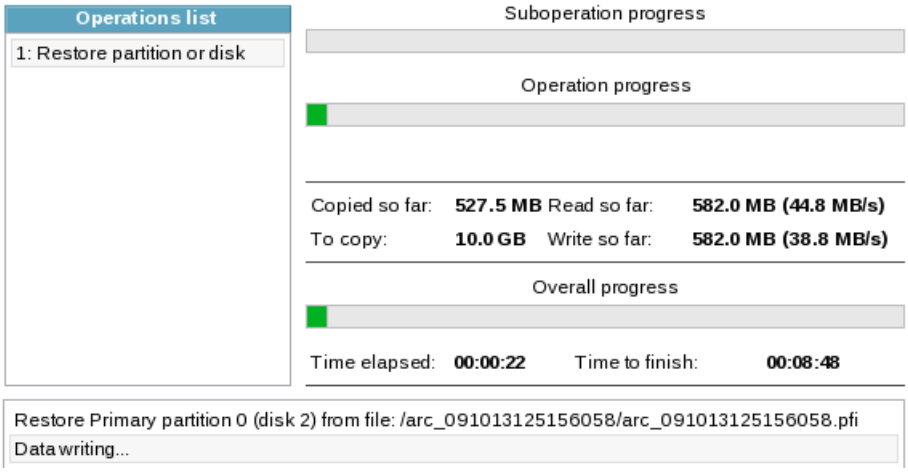


9. In the Progress window you can see in real-time a detailed report on all actions carried out by the program.


Operations list
1: Restore partition or disk
Suboperation progress
Operation progress
Copied so far: 527.5 MB Read so far: 582.0 MB (44.8 MB/s)
To copy: 10.0 GB Write so far: 582.0 MB (38.8 MB/s)
Overall progress
Time elapsed: 00:00:22 Time to finish: 00:08:48
Restore Primary partition 0 (disk 2) from file: /arc_091013125156058/arc_091013125156058.pfi
Data writing...

10. After completing the operation close the wizard and reboot the computer.

To make Windows bootable on different hardware, please additionally complete the P2P Adjust OS Wizard.

Restoring a system partition from external media (CD/DVD)

Let's assume that your computer fails to boot because of a virus attack or corruption of some system critical files. But you've got a backup of your system partition on a bootable DVD disc. That's just enough to easily get your system back on track again.

To restore your system partition from a backup image located on CD/DVD when the current OS is down, please do the following:

1. Insert a CD/DVD disc containing the previously prepared backup image into a CD/DVD drive (the BIOS must be enabled to boot the system from the CD/DVD device).

This scenario implies that you have got a bootable archive on your CD/DVD.

In case the backup image is stored on several CD/DVD disks, please insert the first one.

2. Restart the computer.
3. In the boot menu select **Normal Mode** to use the Linux recovery environment (more preferable) or **Safe Mode** to use the PTS DOS recovery environment (in case you've got problems with Linux). Moreover you've got the option to boot into the **Low-Graphics Safe Mode** (PTS DOS safe mode) to cope with a serious hardware

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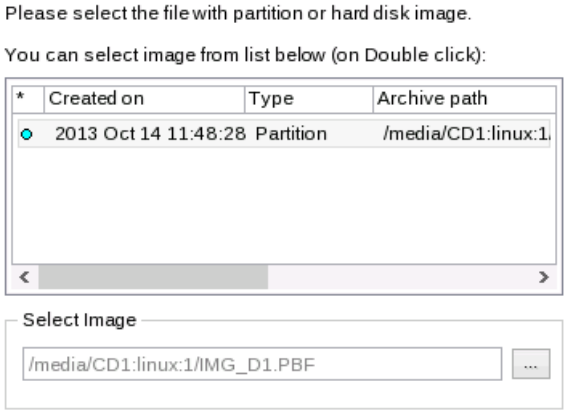
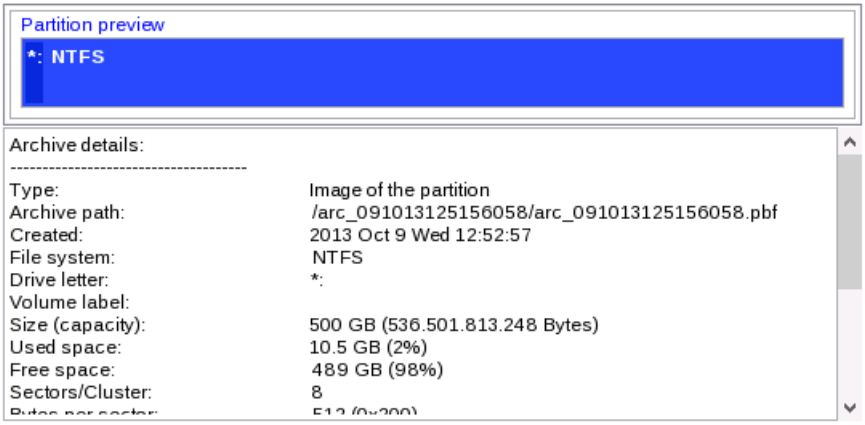
incompatibility. In this case, only the minimal set of drivers will be included, like hard disk, monitor, and keyboard drivers. This mode has simple graphics and a simple menu.

By default the Normal Mode will be automatically initiated after a 10 second idle period.

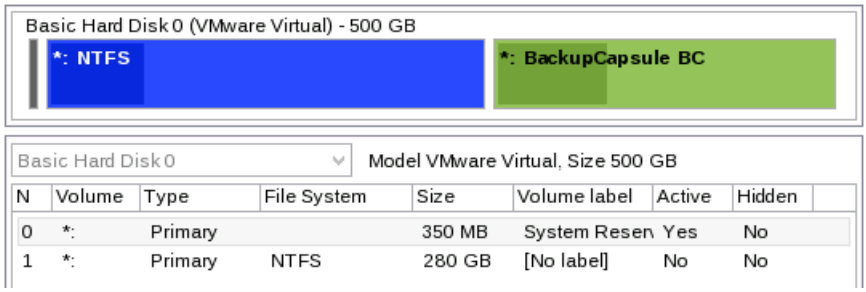
4. In the PTS DOS launch menu select the Simple Restore Wizard. You can find the same wizard in Linux as well.
5. On the Wizard's Welcome page, click the Next button.
6. On the What to Restore page, you can see a list of available images (if several). Most likely the required archive will be there too. If not, click the standard browse button [...] to find it. When you find your image, double click on it to proceed.


Please select the file with partition or hard disk image.
You can select image from list below (on Double click):
* Created on Type Archive path
2013 Oct 14 11:48:28 Partition /media/CD1:linux:1
Select Image
/media/CD1:linux:1/IMG_D1.PBF
...

7. On the Image Properties page, make sure that you select the correct image by viewing the provided information about the archive.



8. On the next page specify a hard disk, then one of its partitions to restore the image to (if several in your computer). By default, the program offers to restore the archive exactly where it belongs. That's what we actually need.


Basic Hard Disk 0 (VMware Virtual) - 500 GB
*: NTFS
*: BackupCapsule BC
Basic Hard Disk 0
Model VMware Virtual, Size 500 GB
N Volume Type File System Size Volume label Active Hidden
0 *: Primary 350 MB System Resen Yes No
1 *: Primary NTFS 280 GB [No label] No No

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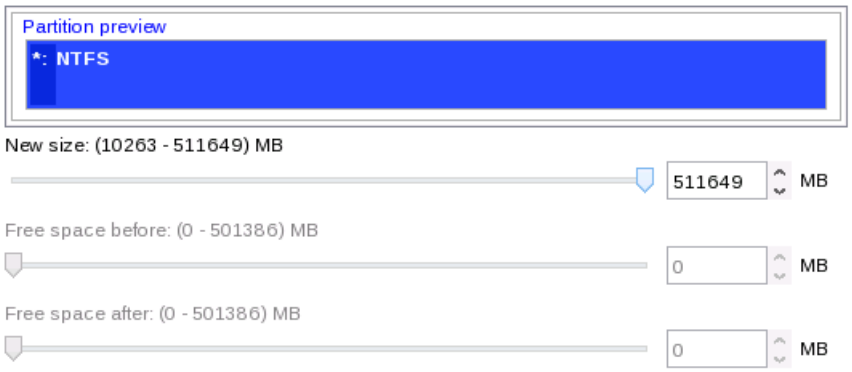
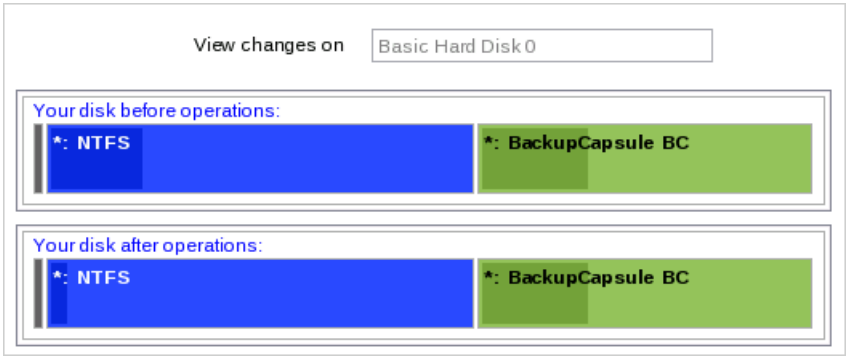
All contents on the partition selected for restoring purposes will be deleted during the operation.

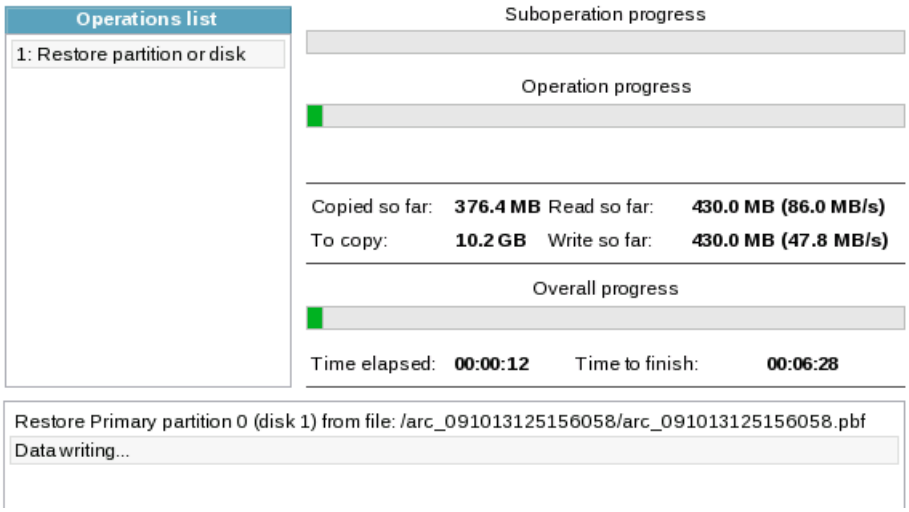
9. On the Partition Start and Size page you can change size of the partition and its location if necessary.



10. On the Restore Summary page you can see your hard disk layout before and after the operation. Click the Next button to initiate the restore process.



11. In the Progress window you can see in real-time a detailed report on all actions carried out by the program.


Operations list
1: Restore partition or disk
Suboperation progress
Operation progress
Copied so far: 376.4 MB Read so far: 430.0 MB (86.0 MB/s)
To copy: 10.2 GB Write so far: 430.0 MB (47.8 MB/s)
Overall progress
Time elapsed: 00:00:12 Time to finish: 00:06:28
Restore Primary partition 0 (disk 1) from file: /arc_091013125156058/arc_091013125156058.pbf
Data writing...

12. After completing the operation close the wizard, and then reboot the computer.

To make Windows bootable on different hardware, please additionally complete the P2P Adjust OS Wizard.

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Restoring a system partition from a network drive

To restore your system partition from a backup image located on a network drive, please do the following:

1. Start up the computer from the WinPE recovery media.

Please use Recovery Media Builder to prepare Paragon's recovery environments on CD/DVD, flash, or in an ISO-image.

To automatically boot from the recovery media please make sure the on-board BIOS is set up to boot from CD/USB first.

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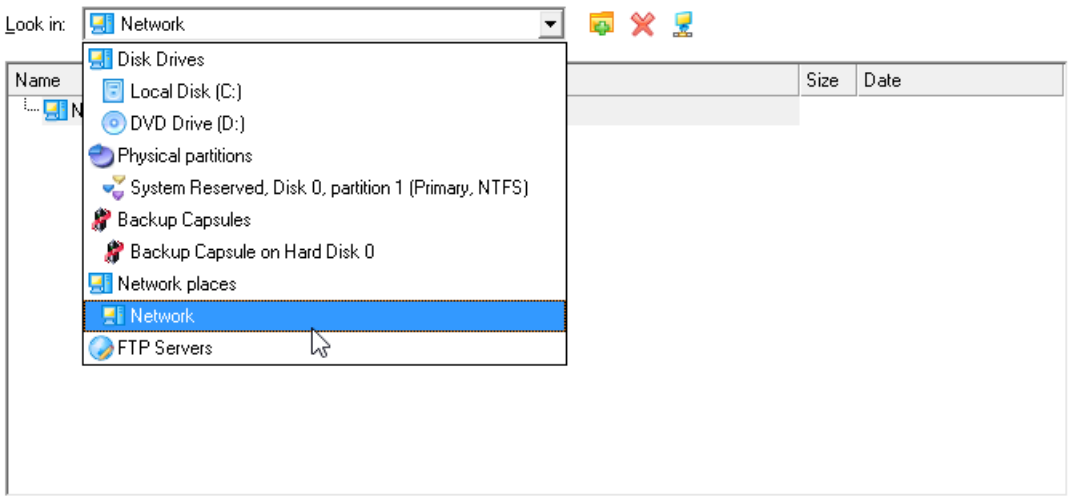
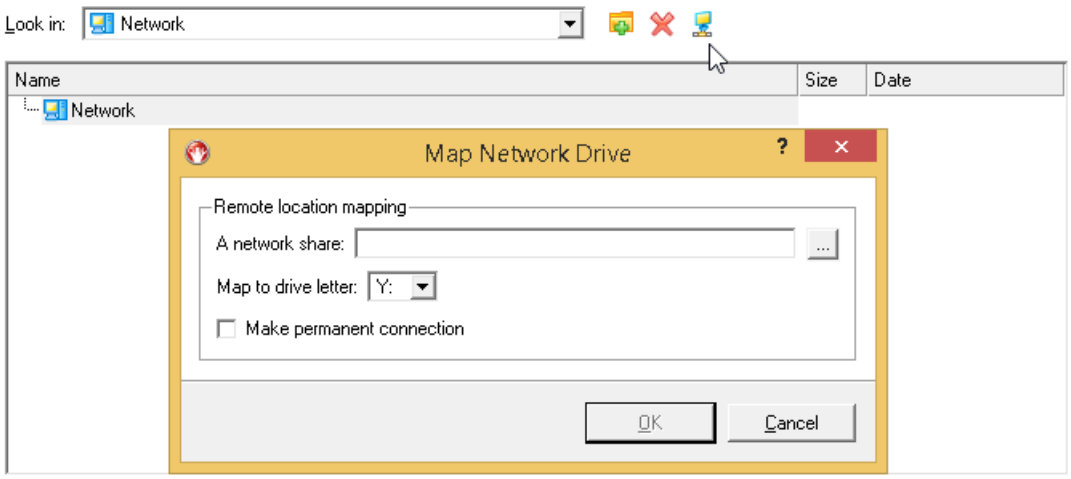
2. Enable the Legacy features view.
3. Launch the **Restore Wizard**.
4. On the Restore Wizard's Welcome page, click the Next button.
5. On the Browse for Archive page you need to specify the required backup image. So you should take the following steps to do that:
   - Select **Network** as a backup destination;



   - Map a network disk where your archives are placed:

     - Call the Map Network Drive dialog by clicking the appropriate button;



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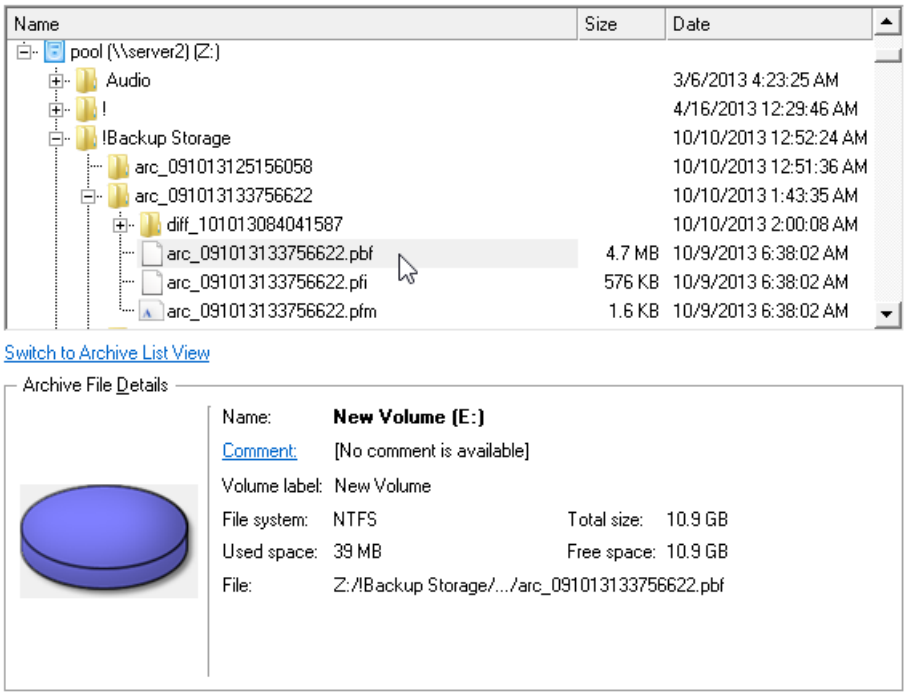
- Click the standard browse button [...] to browse for the required network share or manually enter a path to it;

- Define a letter from the pull-down list of available drive letters;

- Click the **Connect as user** button at the foot of the dialog page to specify a user name and password to access the selected network share if necessary.

You can also map a network disk with Network Configurator.

- Choose the required archive in the browser-like window. The Archive File Details section displays a short description of the selected image.



6. The What to Restore page displays detailed information about the contents of the archive. Select the required item to restore. In our case it is the first partition of the disk.

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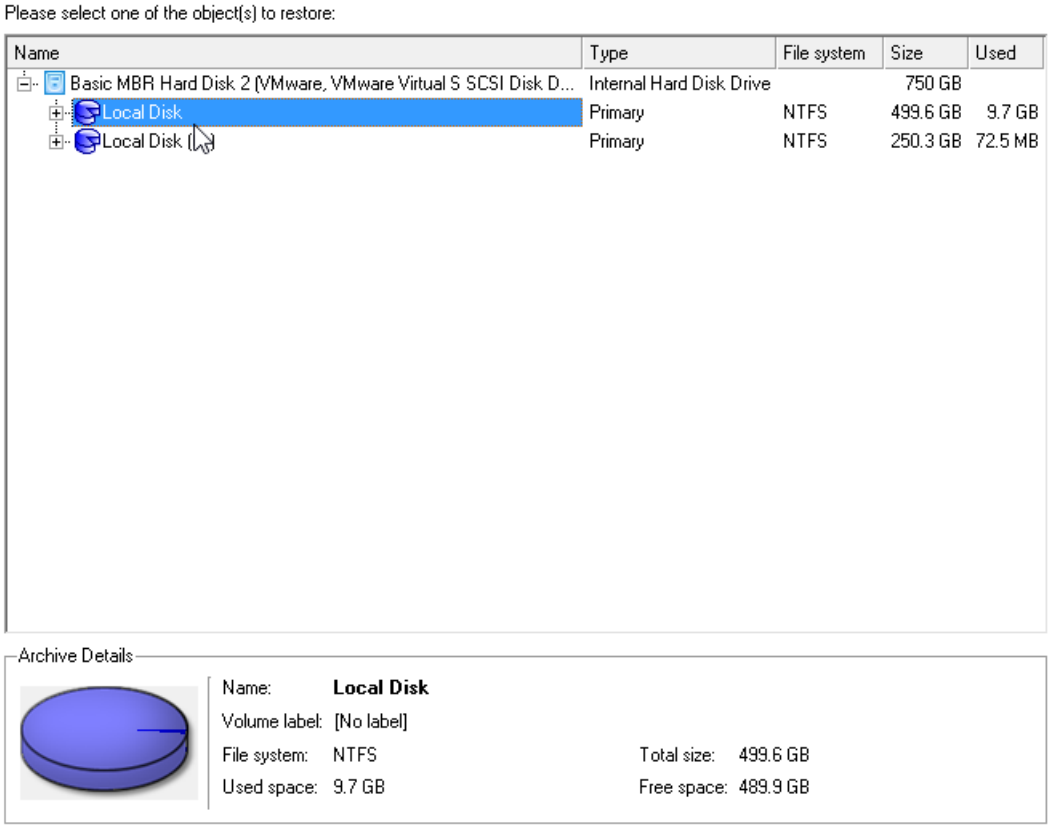
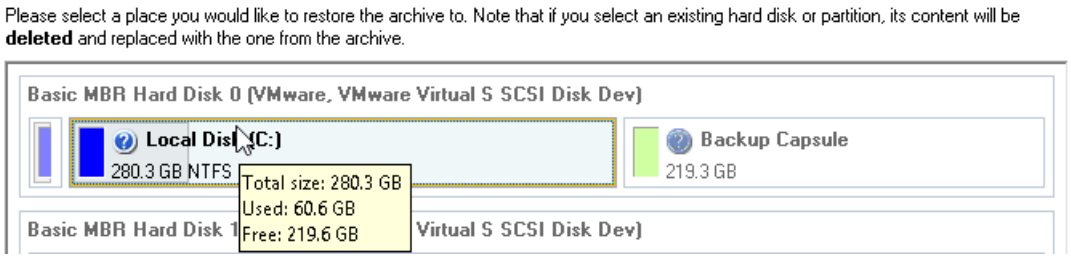


7. On the Where to Restore page specify a hard disk, then one of its partitions to restore the image to (if several in your computer). By default, the program offers to restore the archive exactly where it belongs. That's what we actually need.


Please select a place you would like to restore the archive to. Note that if you select an existing hard disk or partition, its content will be deleted and replaced with the one from the archive.
Basic MBR Hard Disk 0 (VMware, VMware Virtual S SCSI Disk Dev)
Local Disk (C:)
280.3 GB NTFS
Total size: 280.3 GB
Used: 60.6 GB
Free: 219.6 GB
Backup Capsule
219.3 GB
Basic MBR Hard Disk 1
Virtual S SCSI Disk Dev)

All contents on the partition selected for restoring purposes will be deleted during the operation.

8. On the Restore Results page you can see the resulted disk layout. Besides there's the possibility to change size of the partition and its location if necessary as well as assign a particular drive letter. If you've got to do with a 64-bit Windows configured to the uEFI boot mode, the **Switch EFI to boot from destination drive** option will become available for you to define what instance of Windows OS you'd like to boot from once the operation is over. Anyway you can specify a bootable device at any time through Boot Corrector.

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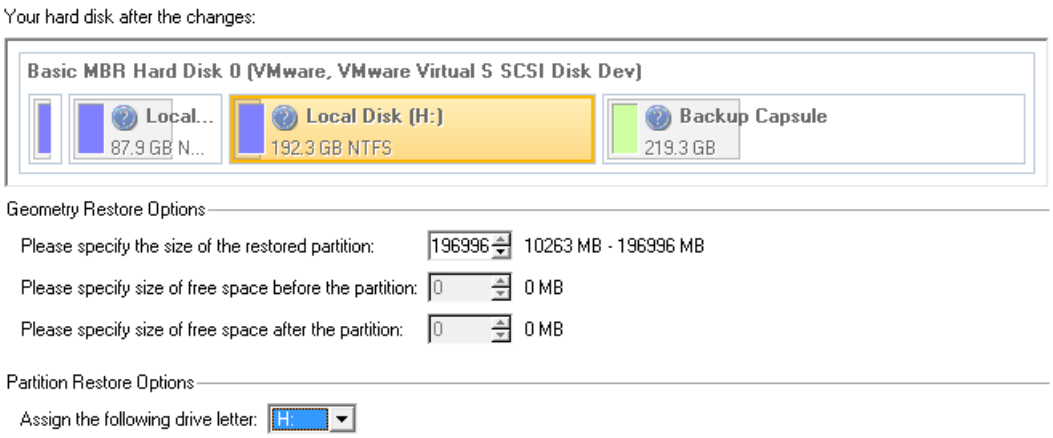

9. On the next page of the wizard confirm the operation by selecting the appropriate option.
10. In the Progress window you can see in real-time a detailed report on all actions carried out by the program. Mark the checkbox at the bottom of the window to automatically switch off the computer on the successful accomplishment of the restore operation.
11. After completing the operation close the wizard, and then reboot the computer.

Restoring a system partition from a local drive

Let's assume that your operating system gives trouble after having installed brand new software. But you've got a backup of the system partition on a local disk. That's just enough to easily roll it back to the point when run smoothly.

To restore your system partition from a backup image located on a local disk, please do the following:

1. Enable the Legacy features view.
2. Click the **Backup & Restore** tab on the Ribbon Panel, then select **Restore**.

There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.

3. On the Restore Wizard's Welcome page, click the Next button.
4. On the Browse for Archive page, specify the required archive:
   - By clicking the **Switch to Archive List View** link, you can see a list of images contained in the Archive Database (if any).

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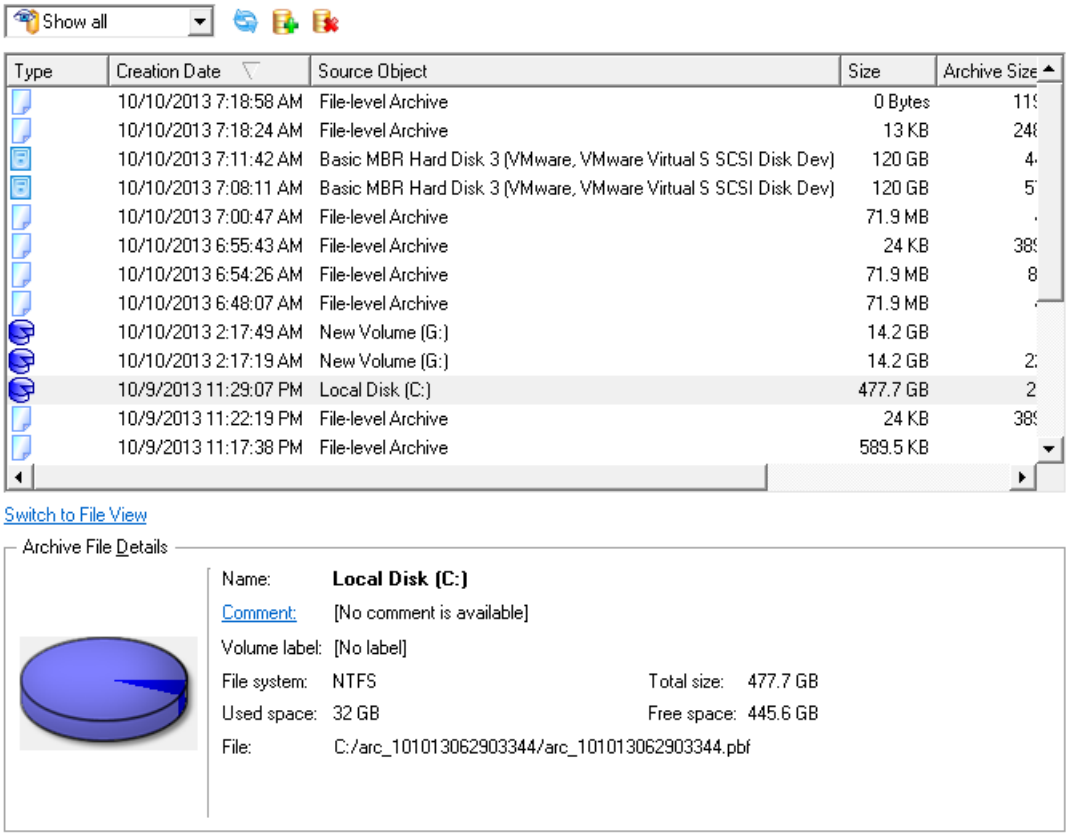
Show all
Type
Creation Date
Source Object
Size
Archive Size
10/10/2013 7:18:58 AM File-level Archive 0 Bytes
10/10/2013 7:18:24 AM File-level Archive 13 KB
10/10/2013 7:11:42 AM Basic MBR Hard Disk 3 (VMware, VMware Virtual S SCSI Disk Dev) 120 GB
10/10/2013 7:08:11 AM Basic MBR Hard Disk 3 (VMware, VMware Virtual S SCSI Disk Dev) 120 GB
10/10/2013 7:00:47 AM File-level Archive 71.9 MB
10/10/2013 6:55:43 AM File-level Archive 24 KB
10/10/2013 6:54:26 AM File-level Archive 71.9 MB
10/10/2013 6:48:07 AM File-level Archive 71.9 MB
10/10/2013 2:17:49 AM New Volume (G:) 14.2 GB
10/10/2013 2:17:19 AM New Volume (G:) 14.2 GB
10/9/2013 11:29:07 PM Local Disk (C:) 477.7 GB
10/9/2013 11:22:19 PM File-level Archive 24 KB
10/9/2013 11:17:38 PM File-level Archive 589.5 KB
Switch to File View
Archive File Details
Name: Local Disk (C:)
Comment: [No comment is available]
Volume label: [No label]
File system: NTFS
Total size: 477.7 GB
Used space: 32 GB
Free space: 445.6 GB
File: C:/arc_101013062903344/arc_101013062903344.pbf

To get a clear-cut picture on properties of the required image, just click on it and the section below will (i.e. Archive File Details) display a short description.

To know more on the subject, please consult the Viewing Image Properties chapter.

- By clicking the **Switch to File View** link, you can find the required image in the browser-like window. The section below (i.e. Archive File Details) will also display a short description of the selected image.

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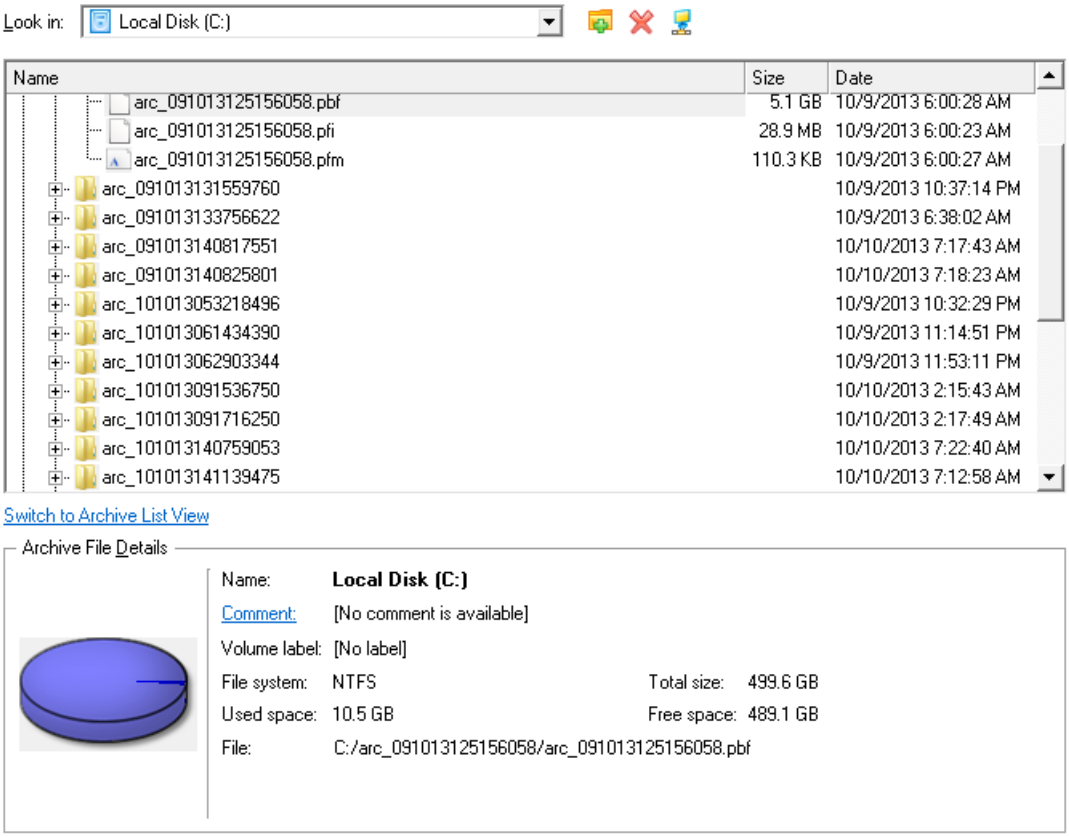
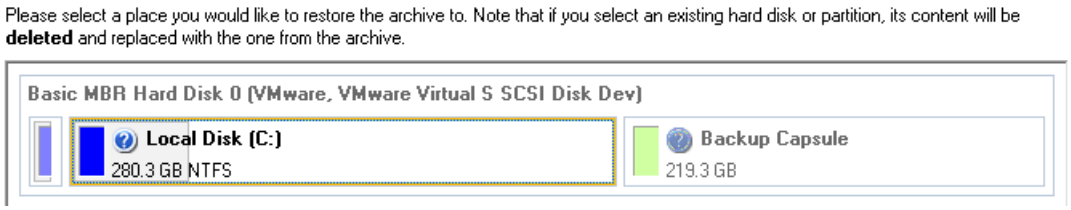


To know more on the subject, please consult the Viewing Image Properties chapter.

5. On the Where to Restore page specify a hard disk, then one of its partitions to restore the image to (if several in your computer). By default, the program offers to restore the archive exactly where it belongs. That's what we actually need.


Please select a place you would like to restore the archive to. Note that if you select an existing hard disk or partition, its content will be deleted and replaced with the one from the archive.
Basic MBR Hard Disk 0 (VMware, VMware Virtual S SCSI Disk Dev)
Local Disk (C:)
280.3 GB NTFS
Backup Capsule
219.3 GB

All contents on the partition selected for restoring purposes will be deleted during the operation.

6. On the Restore Results page you can see the resulted disk layout. Besides there's the possibility to change size of the partition and its location if necessary as well as assign a particular drive letter.

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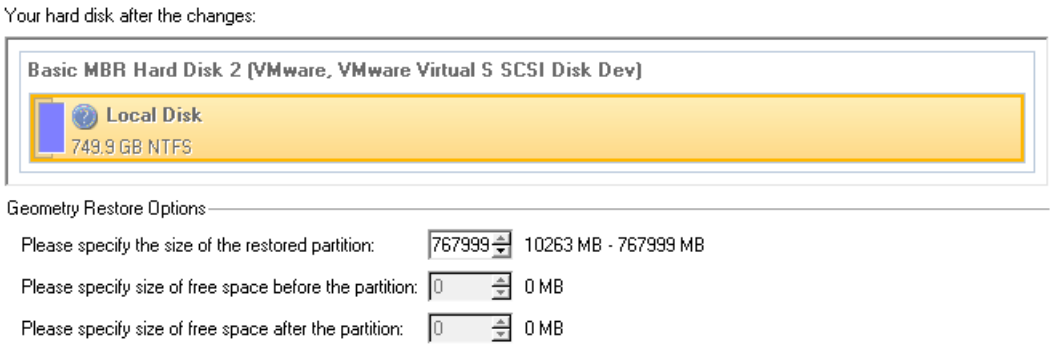
Your hard disk after the changes:
Basic MBR Hard Disk 2 (VMware, VMware Virtual S SCSI Disk Dev)
Local Disk
749.9 GB NTFS
Geometry Restore Options
Please specify the size of the restored partition:
767999
10263 MB - 767999 MB
Please specify size of free space before the partition:
0
0 MB
Please specify size of free space after the partition:
0
0 MB

7. Complete the wizard and then apply the pending changes.
8. The program will require the system restart to accomplish the operation in a special boot-up mode. Click the appropriate button to agree.
9. In the Progress window you can see in real-time a detailed report on all actions carried out by the program.

After completing the operation the program will automatically reboot the computer.

This operation can also be accomplished with our recovery media.

To make Windows bootable on different hardware, please additionally complete the P2P Adjust OS Wizard.

Restoring a dual boot Mac from an external USB drive

Let's assume that your Mac fails to boot because of a hard disk malfunction. But you've got a backup of your hard disk on an external USB drive. Just replace the failed disk with a new one and carry out a bare metal restore.

To restore a dual boot Mac from a backup image located on an external USB drive, please do the following:

1. Start up the computer from our Linux/DOS recovery media.

Please use Recovery Media Builder to prepare Paragon's recovery environments on CD/DVD, flash, or in an ISO-image.

To automatically boot from the recovery media please make sure the on-board BIOS is set up to boot from CD/USB first.

---

2. Connect an external USB drive to the computer.
3. Restart the computer.
4. In the boot menu select **Normal Mode** to use the Linux recovery environment, since it's the only mode that enables to work with USB devices.

By default the Normal Mode will be automatically initiated after a 10 second idle period.

---

5. In the Linux launch menu select the Simple Restore Wizard.
6. On the Wizard's Welcome page, click the Next button.

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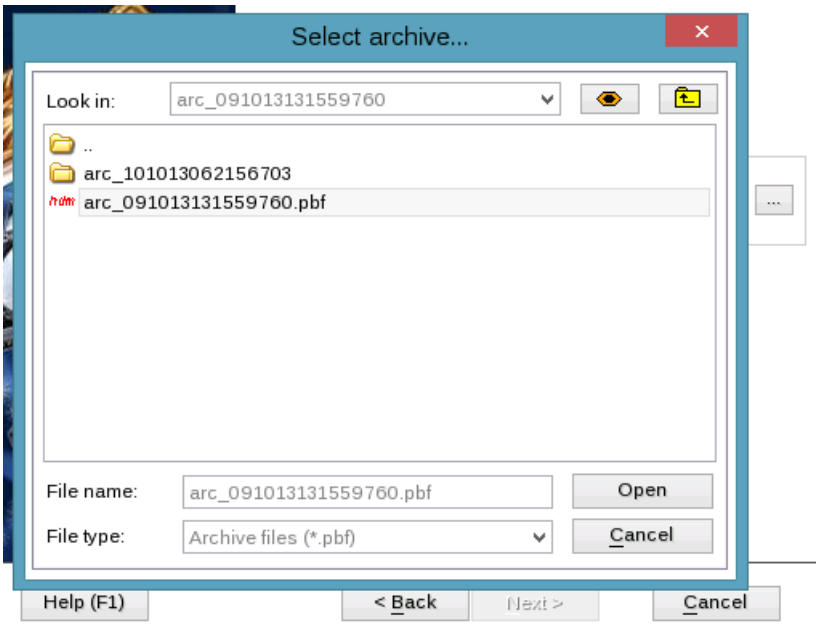
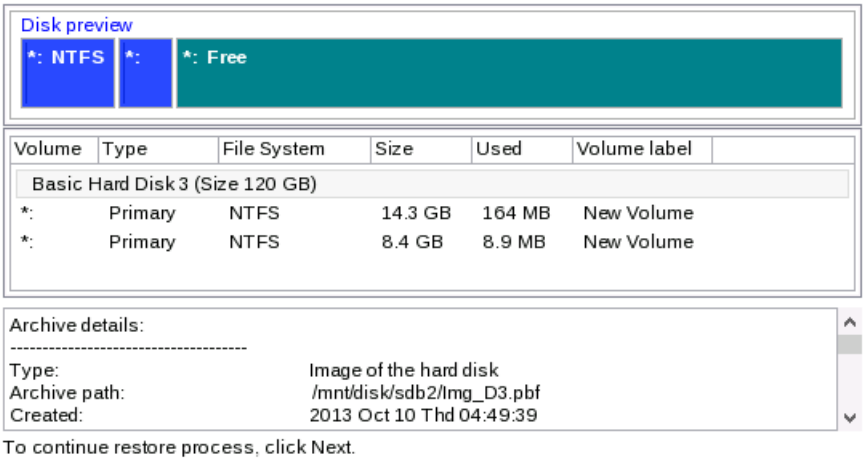
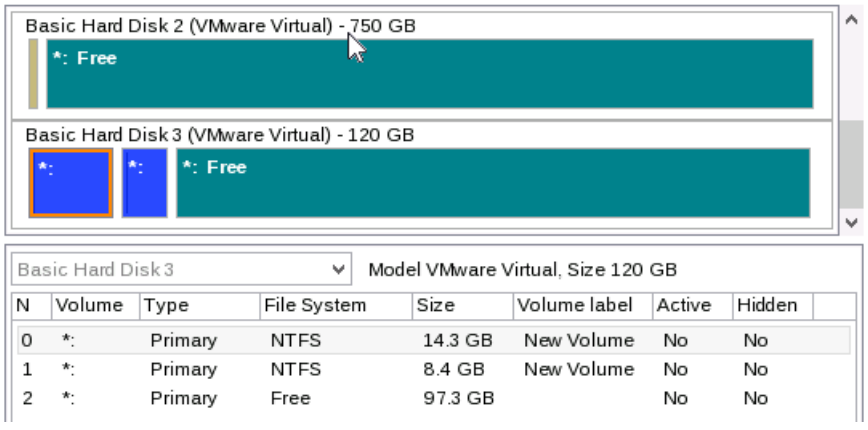
7. On the What to Restore page, click the standard browse button [...] to find the required archive. When done, double click on it to select.



8. On the Image Properties page, make sure that you select the correct image by viewing the provided information about the archive.



9. On the next page specify a hard disk to restore the image to.



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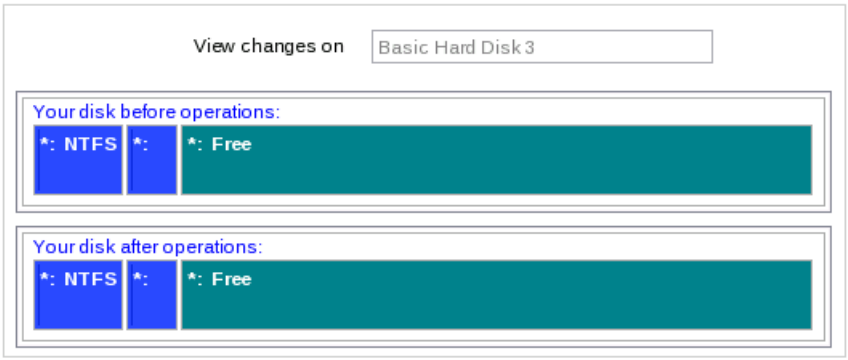
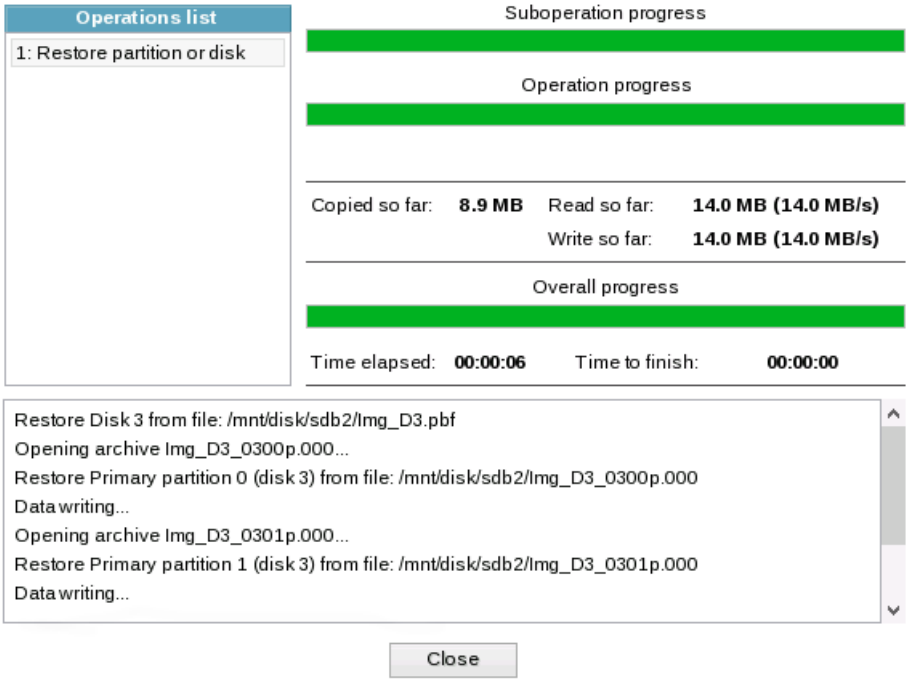
All contents on disk selected for restoring purposes will be deleted during the operation.

10. On the Restore Summary page you can see your hard disk layout before and after the operation. Click the Next button to initiate the restore process.



11. In the Progress window you can see in real-time a detailed report on all actions carried out by the program.


Operations list
1: Restore partition or disk
Suboperation progress
Operation progress
Copied so far: 8.9 MB
Read so far: 14.0 MB (14.0 MB/s)
Write so far: 14.0 MB (14.0 MB/s)
Overall progress
Time elapsed: 00:00:06
Time to finish: 00:00:00
Restore Disk 3 from file: /mnt/disk/sdb2/Img_D3.pbf
Opening archive Img_D3_0300p.000...
Restore Primary partition 0 (disk 3) from file: /mnt/disk/sdb2/Img_D3_0300p.000
Data writing...
Opening archive Img_D3_0301p.000...
Restore Primary partition 1 (disk 3) from file: /mnt/disk/sdb2/Img_D3_0301p.000
Data writing...
Close

12. After completing the operation close the wizard, and then reboot the computer.

Restoring a file increment

Let's assume that you're busy with developing some project and you make file increments of it on a day-to-day basis not to lose valuable information. So you've got a file backup chain. One day you understand that the job of the last three days is a complete and utter failure. Don't give up – recover your project to the state when everything's ok.

To restore a file increment, please do the following:

1. Enable the Legacy features view.
2. Click the **Backup & Restore** tab on the Ribbon Panel, then select **Restore**.

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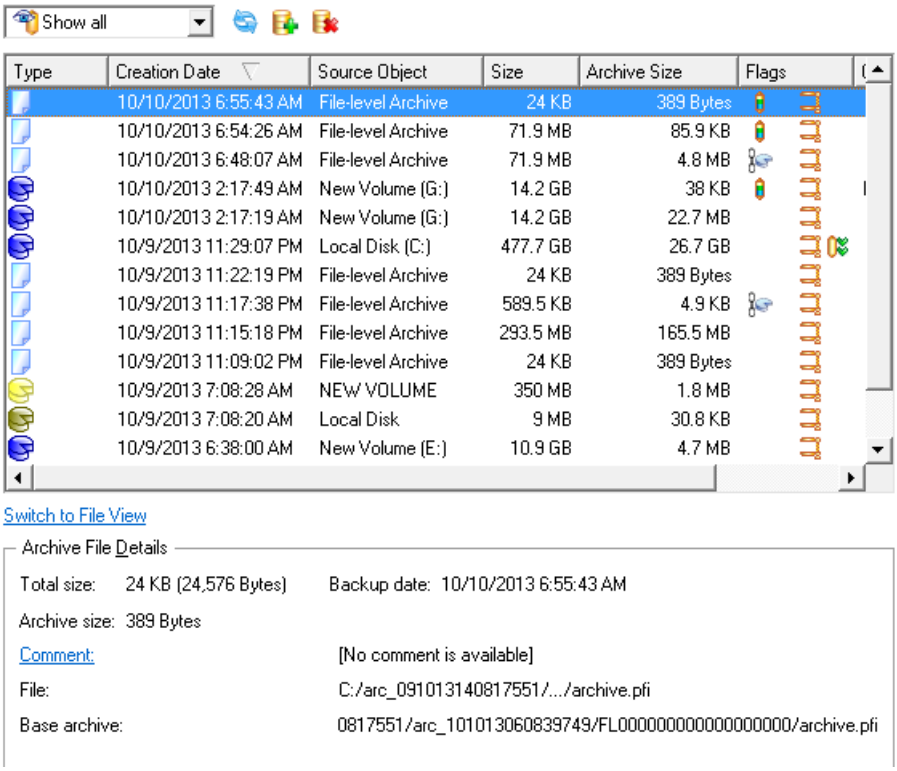
There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.

3. On the Restore Wizard's Welcome page, click the Next button.
4. On the Browse for Archive page, specify the required file increment:
   - By clicking the **Switch to Archive List View** link, you can see a list of images contained in the Archive Database (if any).


Show all
Type
Creation Date
Source Object
Size
Archive Size
Flags
10/10/2013 6:55:43 AM File-level Archive 24 KB 389 Bytes
10/10/2013 6:54:26 AM File-level Archive 71.9 MB 85.9 KB
10/10/2013 6:48:07 AM File-level Archive 71.9 MB 4.8 MB
10/10/2013 2:17:49 AM New Volume (G:) 14.2 GB 38 KB
10/10/2013 2:17:19 AM New Volume (G:) 14.2 GB 22.7 MB
10/9/2013 11:29:07 PM Local Disk (C:) 477.7 GB 26.7 GB
10/9/2013 11:22:19 PM File-level Archive 24 KB 389 Bytes
10/9/2013 11:17:38 PM File-level Archive 589.5 KB 4.9 KB
10/9/2013 11:15:18 PM File-level Archive 293.5 MB 165.5 MB
10/9/2013 11:09:02 PM File-level Archive 24 KB 389 Bytes
10/9/2013 7:08:28 AM NEW VOLUME 350 MB 1.8 MB
10/9/2013 7:08:20 AM Local Disk 9 MB 30.8 KB
10/9/2013 6:38:00 AM New Volume (E:) 10.9 GB 4.7 MB
Switch to File View
Archive File Details
Total size: 24 KB (24,576 Bytes)
Backup date: 10/10/2013 6:55:43 AM
Archive size: 389 Bytes
Comment:
[No comment is available]
File:
C:/arc_091013140817551/.../archive.pfi
Base archive:
0817551/arc_101013060839749/FL00000000000000000/archive.pfi

To get a clear-cut picture on properties of the required image, just click on it and the section below will (i.e. Archive File Details) display a short description.

To know more on the subject, please consult the Viewing Image Properties chapter.

   - By clicking the **Switch to File View** link, you can find the required image in the browser-like window. The section below (i.e. Archive File Details) will also display a short description of the selected image.

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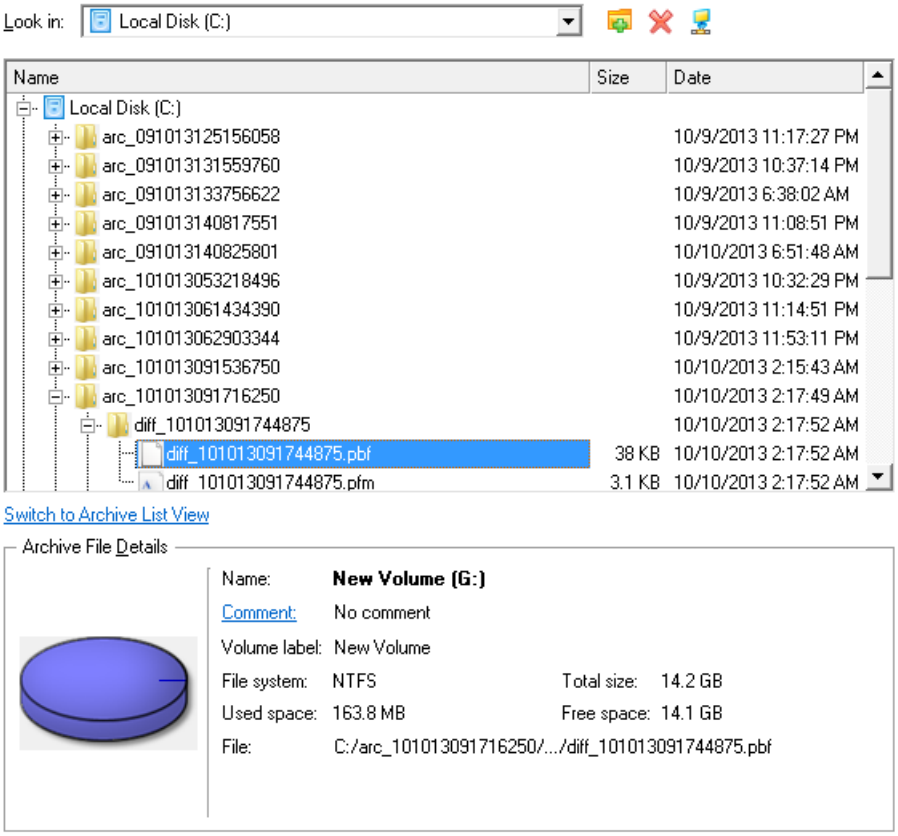
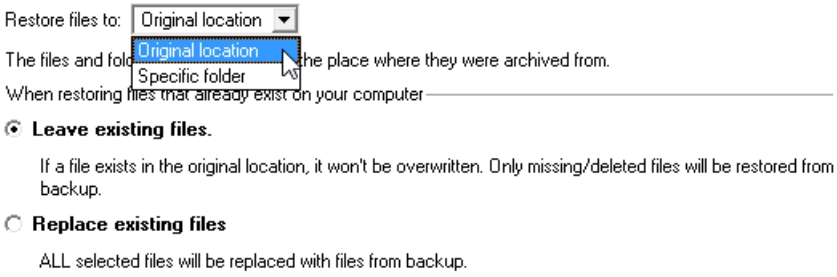


To know more on the subject, please consult the Viewing Image Properties chapter.

5. On the How to Restore page specify the way your archive will be restored. In our case we'd rather restore contents of the backup to its original location with replacing existing files as well.


Restore files to: Original location
Original location
Specific folder
When restoring files that already exist on your computer
Leave existing files.
If a file exists in the original location, it won't be overwritten. Only missing/deleted files will be restored from backup.
Replace existing files
ALL selected files will be replaced with files from backup.

6. Complete the wizard and then apply the pending changes.
7. In the Progress window you can see in real-time a detailed report on all actions carried out by the program.

This operation can also be accomplished with our recovery media.

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Restoring a file increment to a partition backup

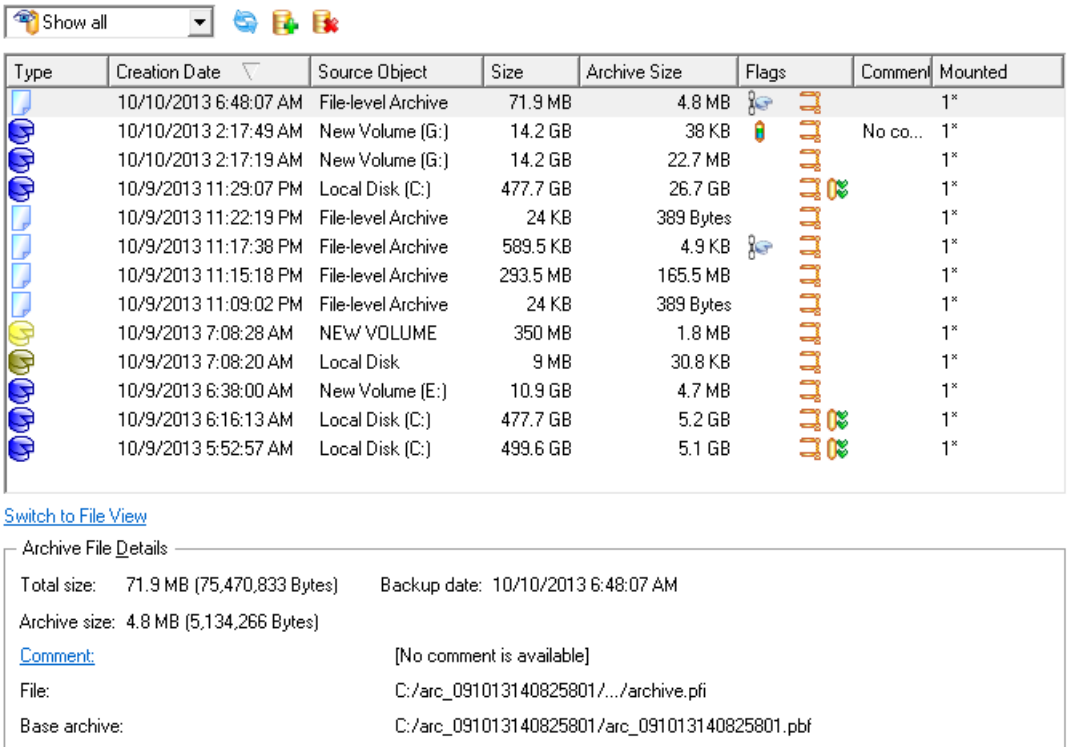
Let's assume that your operating system gives trouble because of a virus attack. But you've got a backup of your system partition on a local disk. Besides you make file increments of your documents and e-mail database to that backup on a regular basis. That's just enough to easily roll everything back to the point when run smoothly.

To restore your system partition with a file increment from a backup image located on a local disk, please do the following:

1. Enable the Legacy features view.
2. Click the **Backup & Restore** tab on the Ribbon Panel, then select **Restore**.

There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.

3. On the Restore Wizard's Welcome page, click the Next button.
4. On the Browse for Archive page, specify the required file increment archive to your system partition backup:
   - By clicking the **Switch to Archive List View** link, you can see a list of images contained in the Archive Database (if any).


Show all
Type
Creation Date
Source Object
Size
Archive Size
Flags
Comment
Mounted
10/10/2013 6:48:07 AM File-level Archive 71.9 MB 4.8 MB 1*
10/10/2013 2:17:49 AM New Volume (G:) 14.2 GB 38 KB No co... 1*
10/10/2013 2:17:19 AM New Volume (G:) 14.2 GB 22.7 MB 1*
10/9/2013 11:29:07 PM Local Disk (C:) 477.7 GB 26.7 GB 1*
10/9/2013 11:22:19 PM File-level Archive 24 KB 389 Bytes 1*
10/9/2013 11:17:38 PM File-level Archive 589.5 KB 4.9 KB 1*
10/9/2013 11:15:18 PM File-level Archive 293.5 MB 165.5 MB 1*
10/9/2013 11:09:02 PM File-level Archive 24 KB 389 Bytes 1*
10/9/2013 7:08:28 AM NEW VOLUME 350 MB 1.8 MB 1*
10/9/2013 7:08:20 AM Local Disk 9 MB 30.8 KB 1*
10/9/2013 6:38:00 AM New Volume (E:) 10.9 GB 4.7 MB 1*
10/9/2013 6:16:13 AM Local Disk (C:) 477.7 GB 5.2 GB 1*
10/9/2013 5:52:57 AM Local Disk (C:) 499.6 GB 5.1 GB 1*
Switch to File View
Archive File Details
Total size: 71.9 MB (75,470,833 Bytes)
Backup date: 10/10/2013 6:48:07 AM
Archive size: 4.8 MB (5,134,266 Bytes)
Comment:
[No comment is available]
File:
C:/arc_091013140825801/.../archive.pfi
Base archive:
C:/arc_091013140825801/arc_091013140825801.pbf

   To get a clear-cut picture on properties of the required image, just click on it and the section below will (i.e. Archive File Details) display a short description.

To know more on the subject, please consult the Viewing Image Properties chapter.

   - By clicking the **Switch to File View** link, you can find the required image in the browser-like window. The section below (i.e. Archive File Details) will also display a short description of the selected image.

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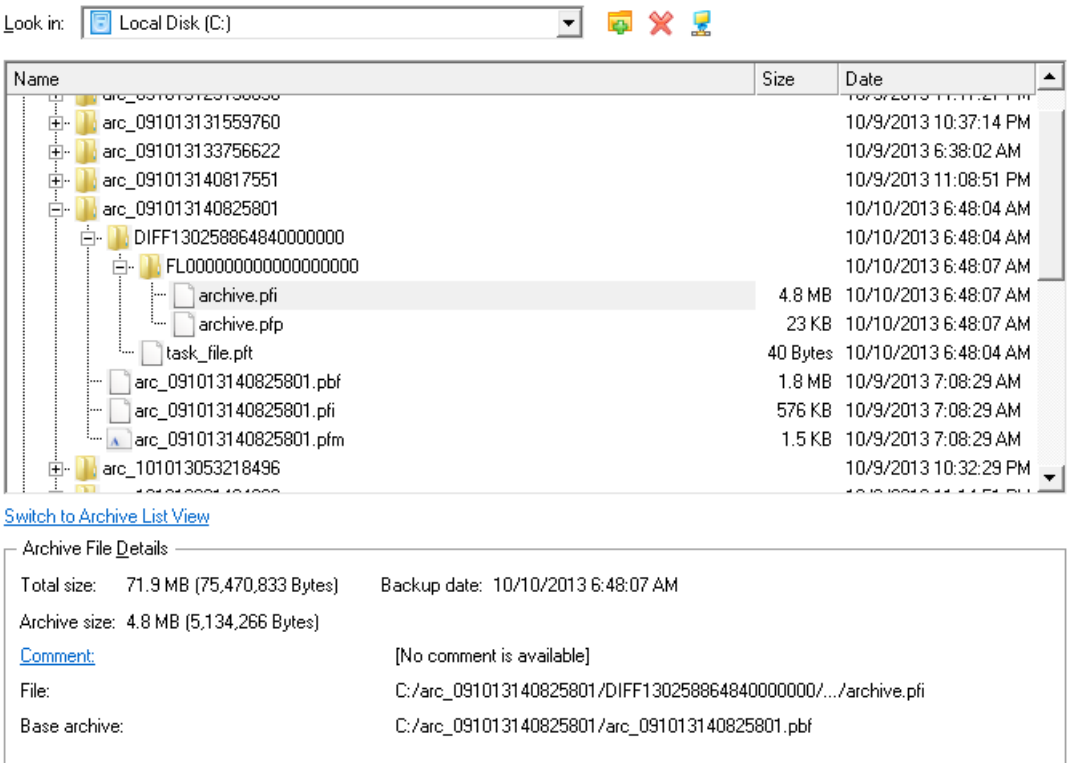
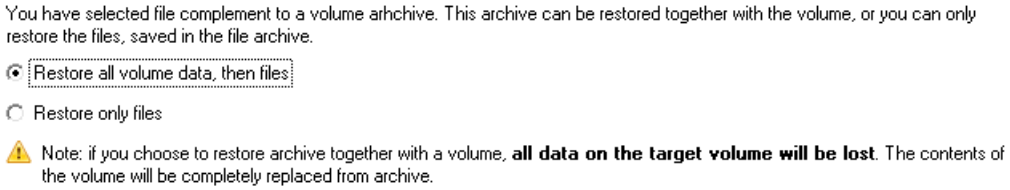
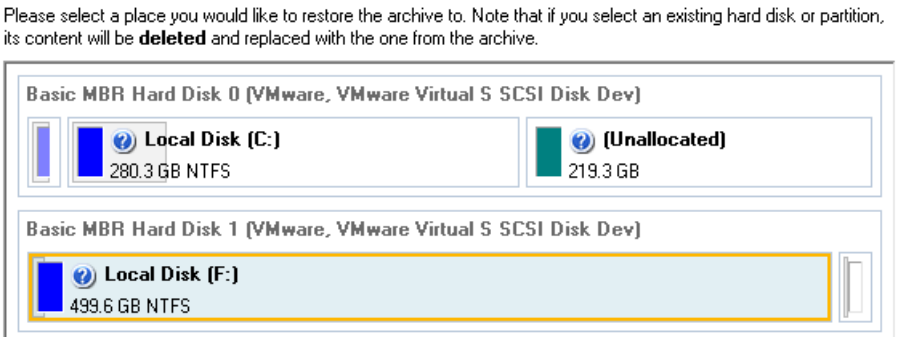


To know more on the subject, please consult the Viewing Image Properties chapter.

5. On the How to Restore File Complement page select whether you want to restore both, the partition archive and the desired file increment or just the file increment. In our case we choose the first option.


You have selected file complement to a volume arhchive. This archive can be restored together with the volume, or you can only restore the files, saved in the file archive.
Restore all volume data, then files
Restore only files
Note: if you choose to restore archive together with a volume, all data on the target volume will be lost. The contents of the volume will be completely replaced from archive.

6. On the Where to Restore page specify a hard disk, then one of its partitions to restore the image to (if several in your computer). By default, the program offers to restore the archive exactly where it belongs. That's what we actually need.


Please select a place you would like to restore the archive to. Note that if you select an existing hard disk or partition, its content will be deleted and replaced with the one from the archive.
Basic MBR Hard Disk 0 (VMware, VMware Virtual S SCSI Disk Dev)
Local Disk (C:)
280.3 GB NTFS
(Unallocated)
219.3 GB
Basic MBR Hard Disk 1 (VMware, VMware Virtual S SCSI Disk Dev)
Local Disk (F:)
499.6 GB NTFS

All contents on the partition selected for restoring purposes will be deleted during the operation.

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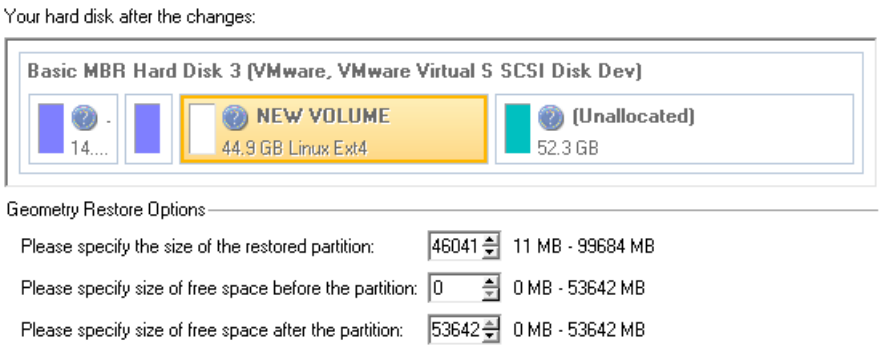
7. On the Restore Results page you can see the resulted disk layout. Besides there's the possibility to change size of the partition and its location if necessary as well as assign a particular drive letter.


Your hard disk after the changes:
Basic MBR Hard Disk 3 (VMware, VMware Virtual S SCSI Disk Dev)
14....
NEW VOLUME
44.9 GB Linux Ext4
(Unallocated)
52.3 GB
Geometry Restore Options
Please specify the size of the restored partition:
46041
11 MB - 99684 MB
Please specify size of free space before the partition:
0
0 MB - 53642 MB
Please specify size of free space after the partition:
53642
0 MB - 53642 MB

8. Complete the wizard and then apply the pending changes.
9. The program will require the system restart to accomplish the operation in a special boot-up mode. Click the appropriate button to agree.
10. In the Progress window you can see in real-time a detailed report on all actions carried out by the program.

After completing the operation the program will automatically reboot the computer.

This operation can also be accomplished with our recovery media.

Restoring separate files and folders from a backup

The program provides a very convenient option to access backup archives and restore only data you need (the so called selective restore functionality).

Restore Wizard

To restore separate files and folders from a backup image with the Restore Wizard, please do the following:

1. Start up the computer from the WinPE recovery media.

Please use Recovery Media Builder to prepare Paragon's recovery environments on CD/DVD, flash, or in an ISO-image.

To automatically boot from the recovery media please make sure the on-board BIOS is set up to boot from CD/USB first.

---

2. Launch the **Restore Wizard**.
3. On the Restore Wizard's Welcome page, click the Next button.
4. On the Browse for Archive page choose the required archive in the browser-like window. The Archive File Details section displays a short description of the selected image.

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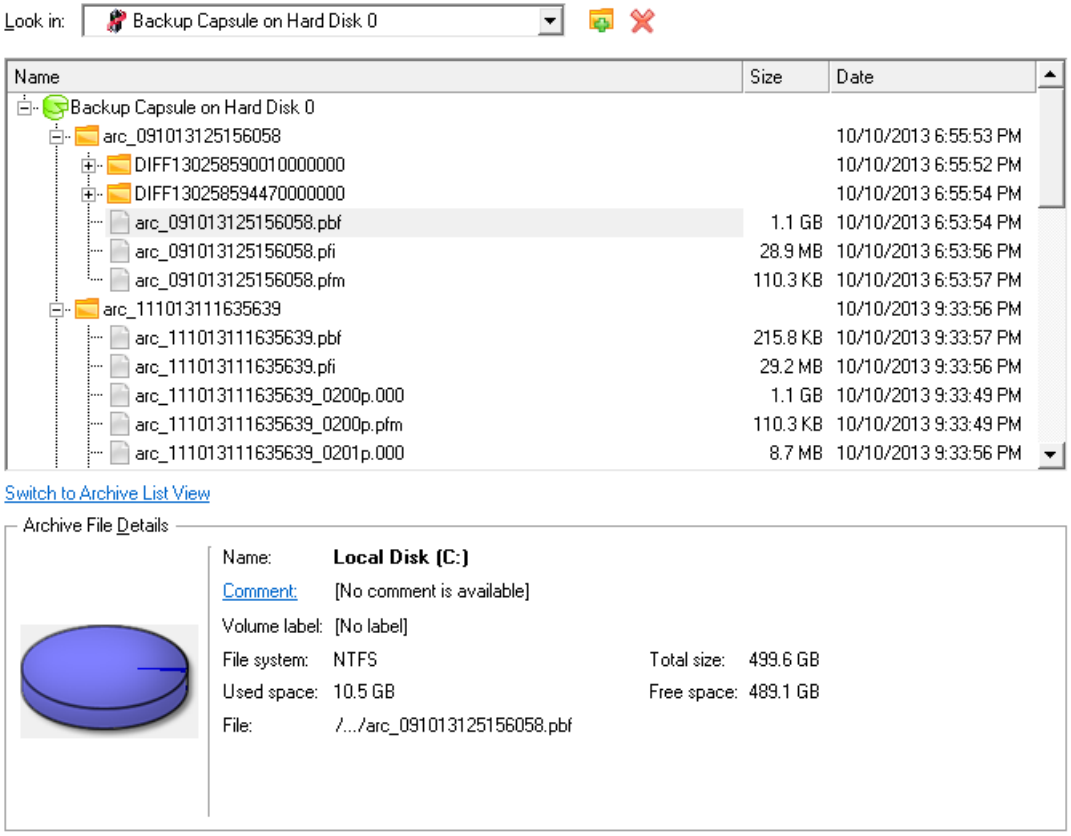
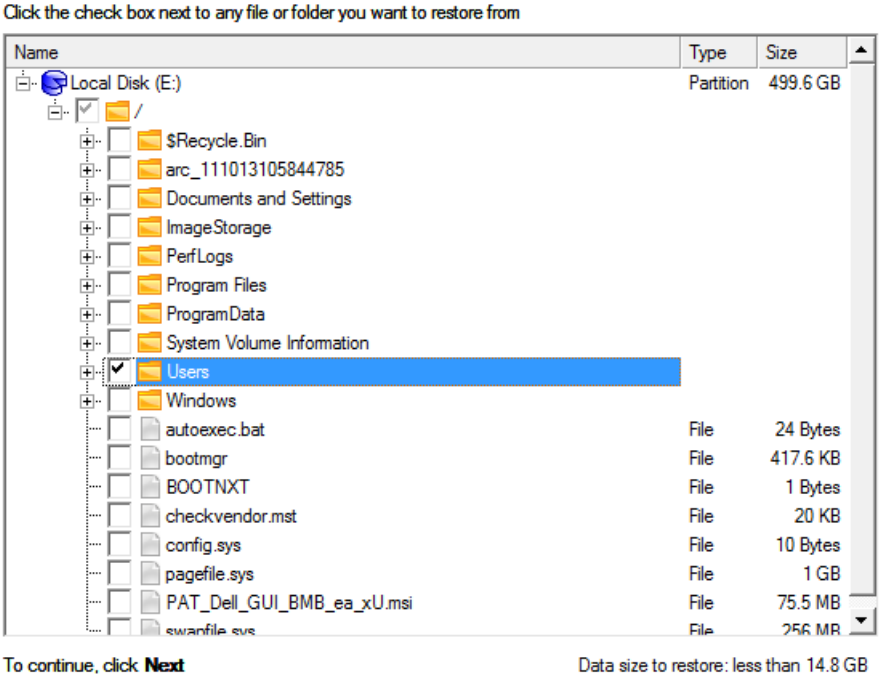


5. On the next page specify what you need to extract from the backup by marking checkboxes next to the required data items. At the right lower corner of the window you can see the resulted amount of the selected data.



6. On the How to Restore page specify the way the selected data will be restored. In our case we'd rather restore contents of the backup to its original location with replacing existing files as well.

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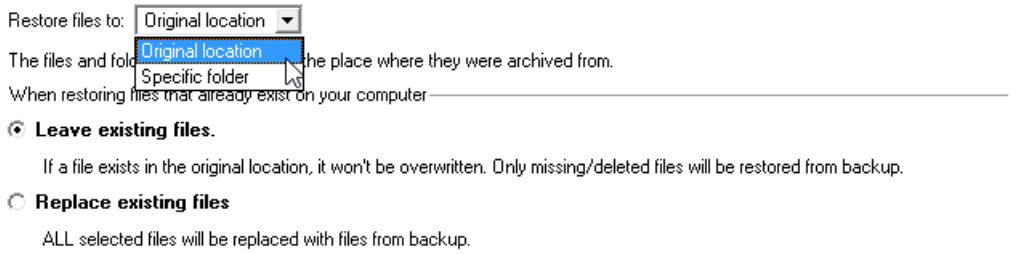
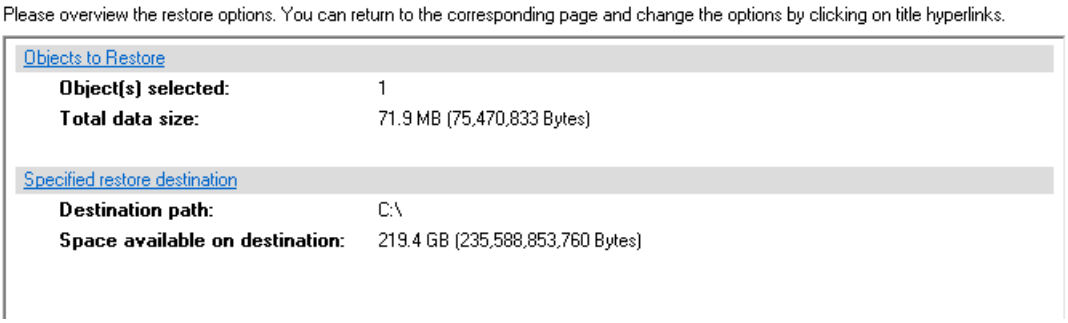

Restore files to:
Original location
Original location
Specific folder
the place where they were archived from.
When restoring files that already exist on your computer
Leave existing files.
If a file exists in the original location, it won't be overwritten. Only missing/deleted files will be restored from backup.
Replace existing files
ALL selected files will be replaced with files from backup.

7. On the Restore Summary page review all parameters of the operation and modify them if necessary.


Please overview the restore options. You can return to the corresponding page and change the options by clicking on title hyperlinks.
Objects to Restore
Object(s) selected: 1
Total data size: 71.9 MB (75,470,833 Bytes)
Specified restore destination
Destination path: C:\
Space available on destination: 219.4 GB (235,588,853,760 Bytes)

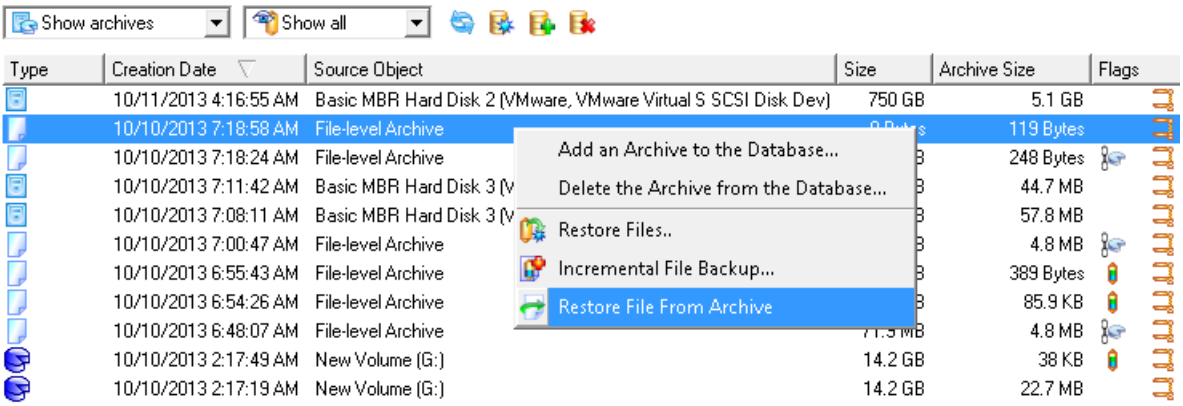
8. On the next page of the wizard confirm the operation by selecting the appropriate option.
9. In the Progress window you can see in real-time a detailed report on all actions carried out by the program.
10. After completing the operation close the wizard, and then reboot the computer.

This operation can also be accomplished under Windows.

File Transfer Wizard

To restore separate files and folders from a backup image with the File Transfer Wizard, please do the following:

1. Call the popup menu for the required backup image (right click of the mouse button) in the Archive Database and then select the menu item: Restore File from Archive. Thus you automatically open it with the File Transfer Wizard.


Show archives
Show all
Type
Creation Date
Source Object
Size
Archive Size
Flags
10/11/2013 4:16:55 AM Basic MBR Hard Disk 2 (VMware, VMware Virtual S SCSI Disk Dev) 750 GB 5.1 GB
10/10/2013 7:18:58 AM File-level Archive 119 Bytes
10/10/2013 7:18:24 AM File-level Archive 248 Bytes
10/10/2013 7:11:42 AM Basic MBR Hard Disk 3 (V 44.7 MB
10/10/2013 7:08:11 AM Basic MBR Hard Disk 3 (V 57.8 MB
10/10/2013 7:00:47 AM File-level Archive 4.8 MB
10/10/2013 6:55:43 AM File-level Archive 389 Bytes
10/10/2013 6:54:26 AM File-level Archive 85.9 KB
10/10/2013 6:48:07 AM File-level Archive 4.8 MB
10/10/2013 2:17:49 AM New Volume (G:) 14.2 GB 38 KB
10/10/2013 2:17:19 AM New Volume (G:) 14.2 GB 22.7 MB
Add an Archive to the Database...
Delete the Archive from the Database...
Restore Files..
Incremental File Backup...
Restore File From Archive

2. Select files you want to copy and place them to Clipboard by pressing the left arrow-button.

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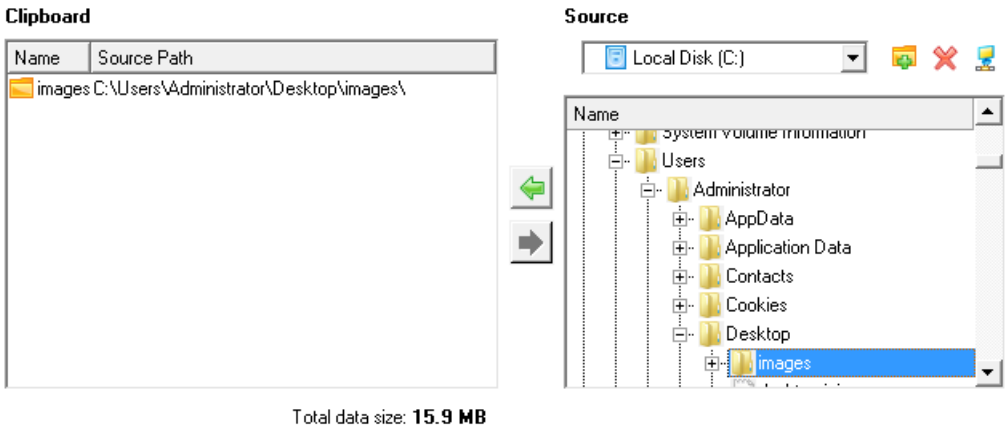
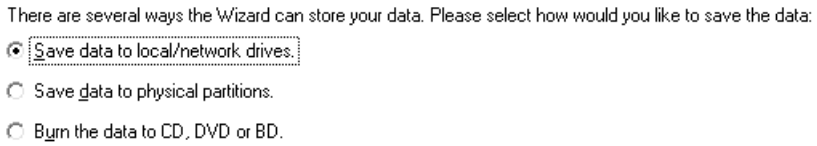
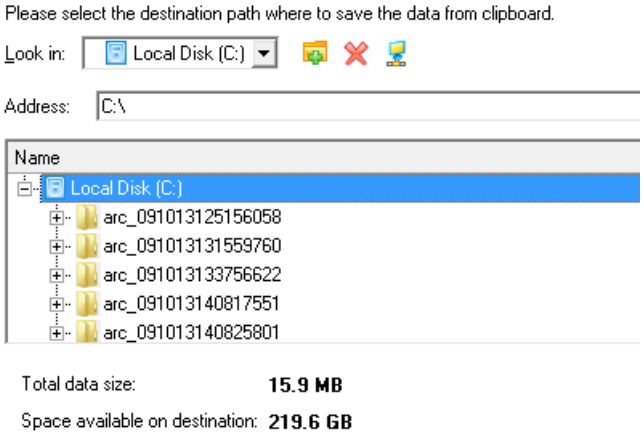


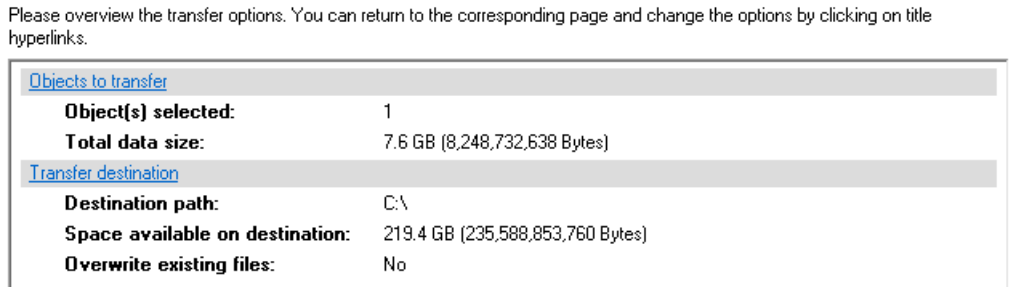
3. On the Select Destination Type, choose the way the data will be stored. Select the **Save data to any local drive or a network share** item.


There are several ways the Wizard can store your data. Please select how would you like to save the data:
Save data to local/network drives.
Save data to physical partitions.
Burn the data to CD, DVD or BD.

4. On the Select Destination Path page, specify the exact place to copy the data to.



5. On the Transfer Summary page check all parameters of the operation. Click the Next button to accomplish the operation.



6. After the operation is completed, close the wizard by pressing the appropriate button.

Volume Explorer

To restore separate files and folders from a backup image with Volume Explorer, please do the following:

1. Click the **Volume Explorer** tab on the Ribbon Panel;

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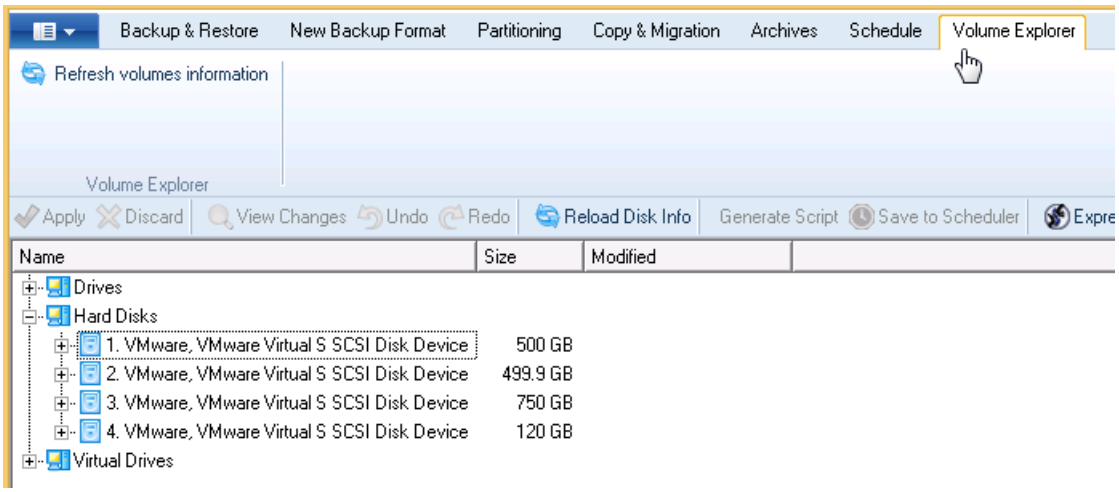
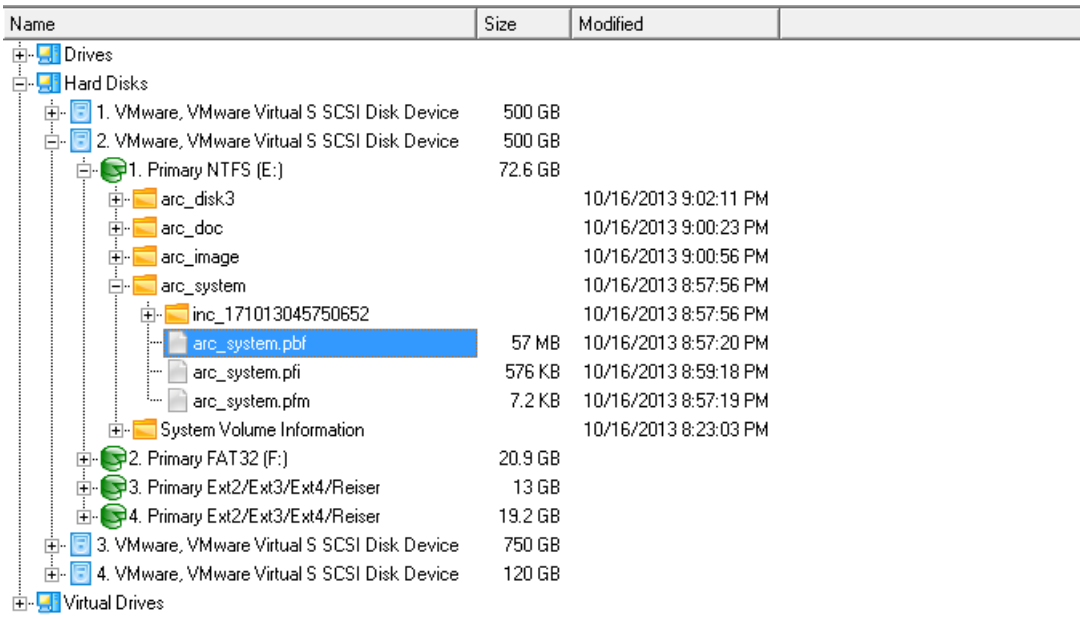
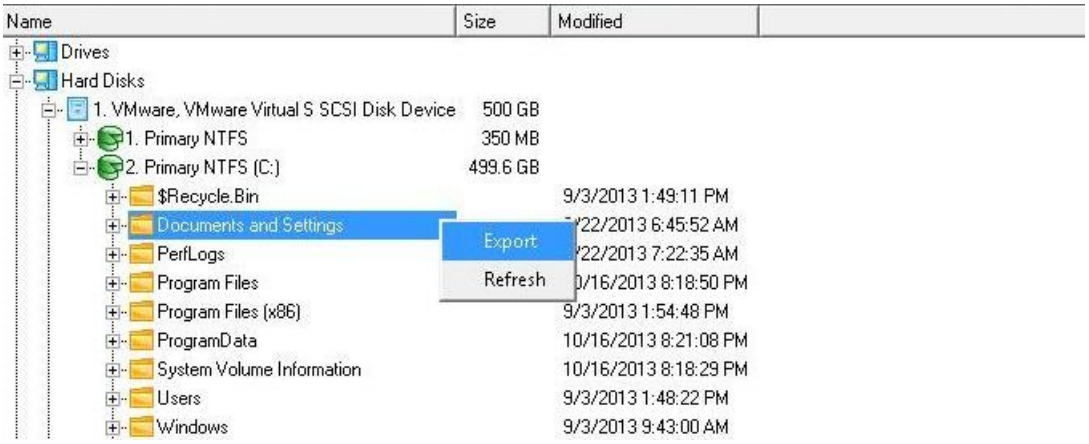


2. Browse for the required archive and then open it by double click of the left mouse button.


Name
Size
Modified
Drives
Hard Disks
1. VMware, VMware Virtual S SCSI Disk Device 500 GB
2. VMware, VMware Virtual S SCSI Disk Device 500 GB
1. Primary NTFS (E:) 72.6 GB
arc_disk3 10/16/2013 9:02:11 PM
arc_doc 10/16/2013 9:00:23 PM
arc_image 10/16/2013 9:00:56 PM
arc_system 10/16/2013 8:57:56 PM
inc_171013045750652 10/16/2013 8:57:56 PM
arc_system.pbf 57 MB 10/16/2013 8:57:20 PM
arc_system.pfi 576 KB 10/16/2013 8:59:18 PM
arc_system.pfm 7.2 KB 10/16/2013 8:57:19 PM
System Volume Information 10/16/2013 8:23:03 PM
2. Primary FAT32 (F:) 20.9 GB
3. Primary Ext2/Ext3/Ext4/Reiser 13 GB
4. Primary Ext2/Ext3/Ext4/Reiser 19.2 GB
3. VMware, VMware Virtual S SCSI Disk Device 750 GB
4. VMware, VMware Virtual S SCSI Disk Device 120 GB
Virtual Drives

3. Call a context menu (right click of the mouse button) for a file/folder you need and then select the Export item.



4. Select a place on the disk where the file/folder will be extracted to.

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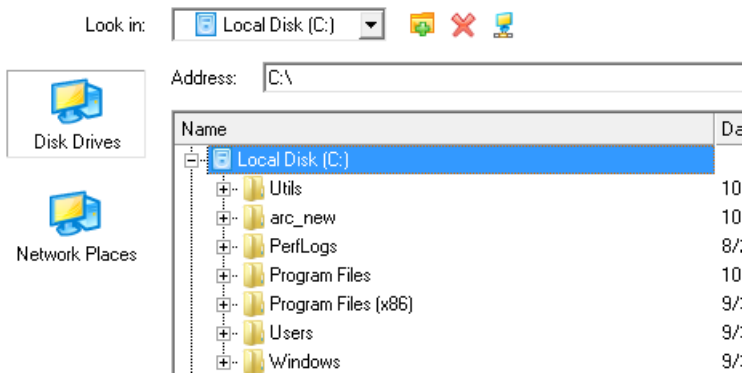


5. Click the OK button to accomplish the operation.

The current version of the program does not enable to access virtual containers and file archives with Volume Explorer.

Fixing Boot Problems without Restore

Correcting EFI parameters

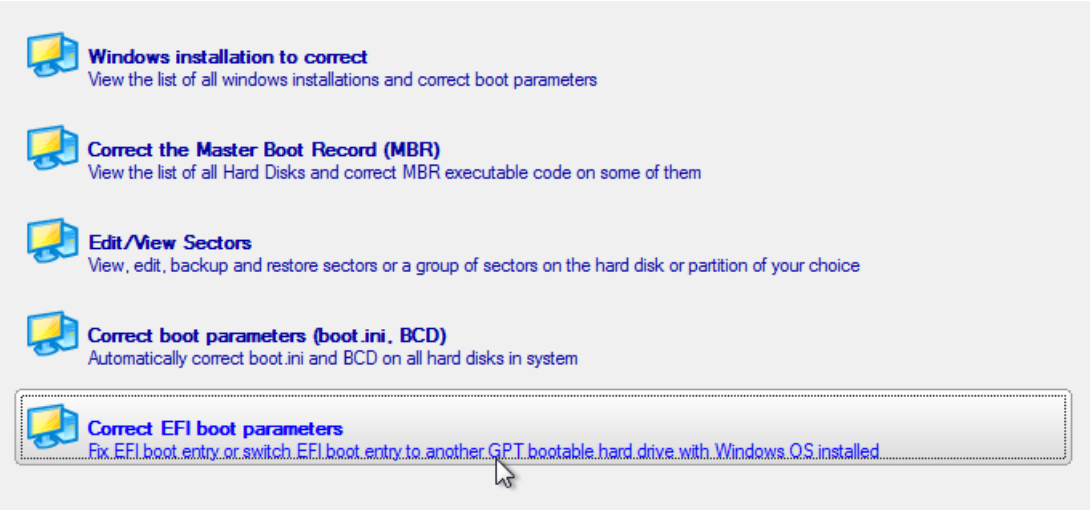
To specify a bootable device in the EFI boot entry, please do the following:

1. Start up the computer from the WinPE recovery media.

Please use Recovery Media Builder to prepare Paragon's recovery environments on CD/DVD, flash, or in an ISO-image.

To automatically boot from the recovery media please make sure the on-board BIOS is set up to boot from CD/USB first.

2. Launch **Boot Corrector**.
3. On the Wizard's Welcome page, click the Next button.
4. Select **Correct EFI parameters** to specify the required bootable device in the EFI boot entry.


Windows installation to correct
View the list of all windows installations and correct boot parameters
Correct the Master Boot Record (MBR)
View the list of all Hard Disks and correct MBR executable code on some of them
Edit/View Sectors
View, edit, backup and restore sectors or a group of sectors on the hard disk or partition of your choice
Correct boot parameters (boot.ini, BCD)
Automatically correct boot.ini and BCD on all hard disks in system
Correct EFI boot parameters
Fix EFI boot entry or switch EFI boot entry to another GPT bootable hard drive with Windows OS installed

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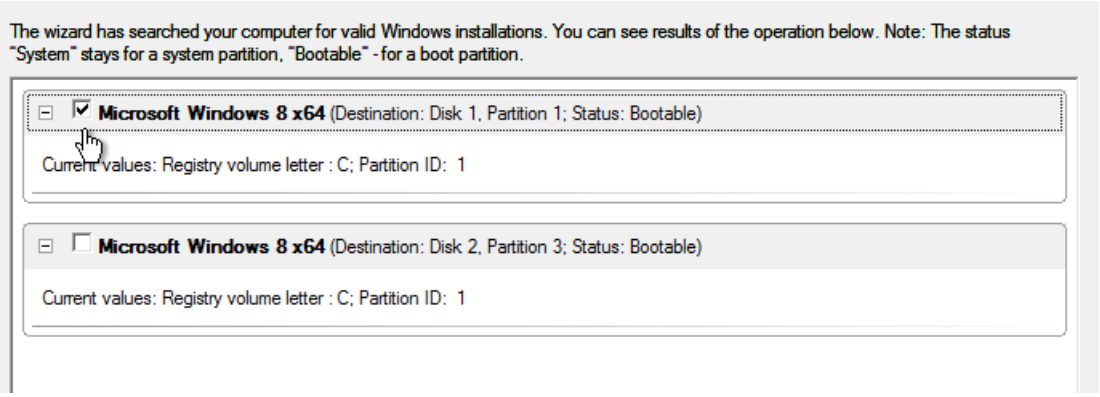
The option above will be available for the user, only if the operation is accomplished through the 64-bit WinPE media.

5. The wizard will detect and list all available GPT partitions that accommodate 64-bit Windows OS. Choose the one you need to boot from, to let the wizard modify the EFI boot entry correspondingly.


The wizard has searched your computer for valid Windows installations. You can see results of the operation below. Note: The status "System" stays for a system partition, "Bootable" - for a boot partition.
Microsoft Windows 8 x64 (Destination: Disk 1, Partition 1; Status: Bootable)
Current values: Registry volume letter : C; Partition ID: 1
Microsoft Windows 8 x64 (Destination: Disk 2, Partition 3; Status: Bootable)
Current values: Registry volume letter : C; Partition ID: 1

6. Confirm the operation.
7. Click the **Finish** button to close **Boot Corrector**.
8. Restart the computer.

Correcting BCD (Boot Configuration Data)

To automatically correct Windows BCD, please do the following:

1. Start up the computer from the WinPE recovery media.

Please use Recovery Media Builder to prepare Paragon's recovery environments on CD/DVD, flash, or in an ISO-image.

To automatically boot from the recovery media please make sure the on-board BIOS is set up to boot from CD/USB first.

2. Launch **Boot Corrector**.
3. On the Wizard's Welcome page, click the Next button.
4. Select **Correct boot parameters…** to let the wizard fix BCD in all found Windows installations.

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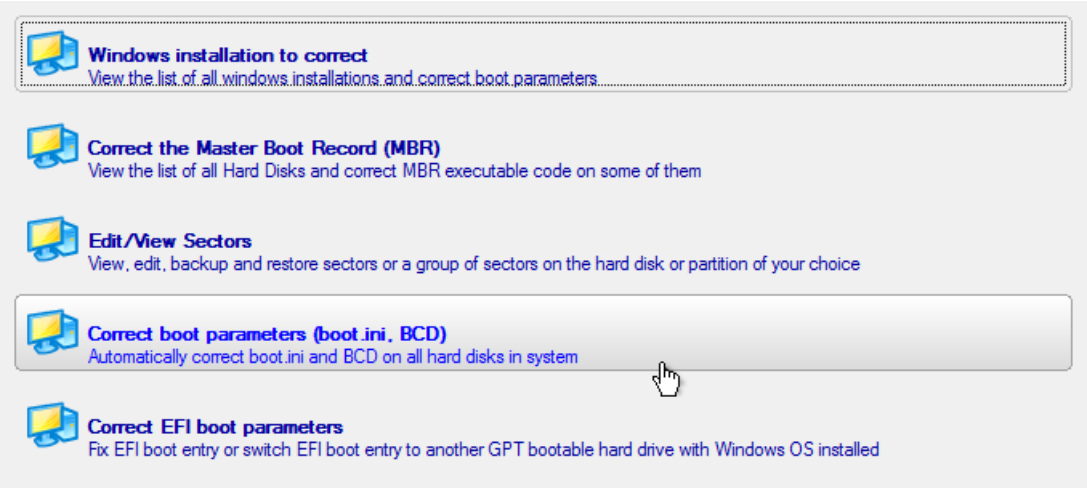
Windows installation to correct
View the list of all windows installations and correct boot parameters
Correct the Master Boot Record (MBR)
View the list of all Hard Disks and correct MBR executable code on some of them
Edit/View Sectors
View, edit, backup and restore sectors or a group of sectors on the hard disk or partition of your choice
Correct boot parameters (boot.ini, BCD)
Automatically correct boot.ini and BCD on all hard disks in system
Correct EFI boot parameters
Fix EFI boot entry or switch EFI boot entry to another GPT bootable hard drive with Windows OS installed

5. Confirm the operation.
6. Click the **Finish** button to close **Boot Corrector**.
7. Restart the computer.

Fixing Windows startup ability

Let's assume that due to an unknown reason your Windows fails to complete the startup procedure. At first everything seems quite OK, you can see the standard startup messages on the screen, but at some moment it hangs up.

To fix your Windows startup ability, please do the following:

1. Start up the computer from our Linux/DOS recovery media.

Please use Recovery Media Builder to prepare Paragon's recovery environments on CD/DVD, flash, or in an ISO-image.

To automatically boot from the recovery media please make sure the on-board BIOS is set up to boot from CD/USB first.

2. In the boot menu select **Normal Mode** to use the Linux recovery environment (more preferable) or **Safe Mode** to use the PTS DOS recovery environment (in case you've got problems with Linux). Moreover you've got the option to boot into the **Low-Graphics Safe Mode** (PTS DOS safe mode) to cope with a serious hardware incompatibility. In this case, only the minimal set of drivers will be included, like hard disk, monitor, and keyboard drivers. This mode has simple graphics and a simple menu.

By default the Normal Mode will be automatically initiated after a 10 second idle period.

3. In the Linux launch menu select Boot Corrector. You can find it in PTS DOS as well.
4. On the Wizard's Welcome page, select the **Search for Windows installations to correct** option.

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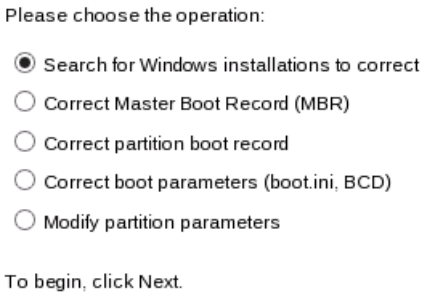
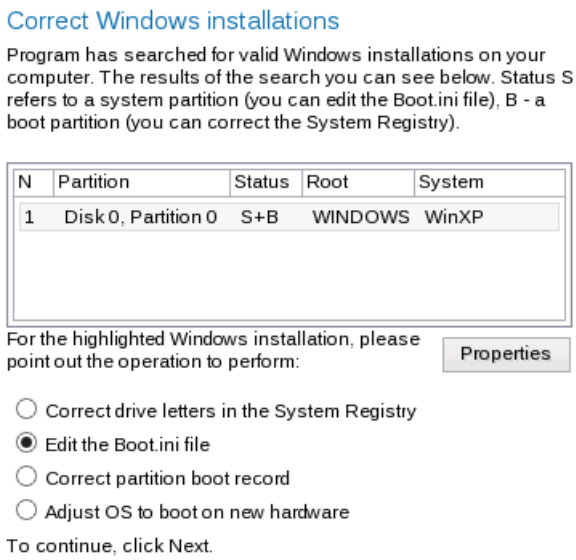
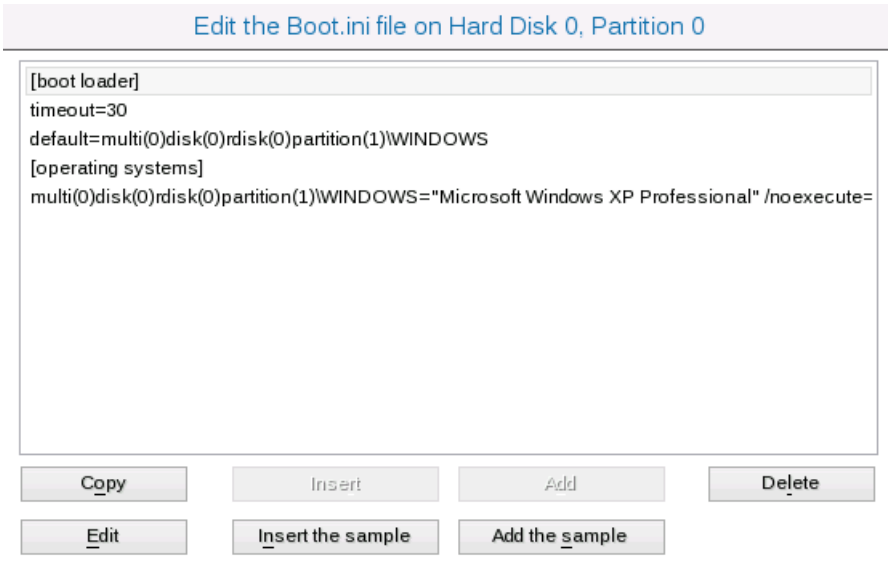

Please choose the operation:
Search for Windows installations to correct
Correct Master Boot Record (MBR)
Correct partition boot record
Correct boot parameters (boot.ini, BCD)
Modify partition parameters
To begin, click Next.

5. On the next page choose the required Windows installation from the list of found installations (if several), then select the **Edit the Boot.ini file** option. If you're not sure which installation you need, please use the Properties button to get more info on the selected item.


Correct Windows installations
Program has searched for valid Windows installations on your computer. The results of the search you can see below. Status S refers to a system partition (you can edit the Boot.ini file), B - a boot partition (you can correct the System Registry).
N Partition Status Root System
1 Disk 0, Partition 0 S+B WINDOWS WinXP
For the highlighted Windows installation, please point out the operation to perform:
Properties
Correct drive letters in the System Registry
Edit the Boot.ini file
Correct partition boot record
Adjust OS to boot on new hardware
To continue, click Next.

6. Examine the file – maybe that's where the problem is. If it contains a mistake, correct it by using the appropriate buttons.



7. If the Boot.ini file does not contain any mistake, please return to the Correct Windows Installations page to correct drive letters in the Windows System Registry.

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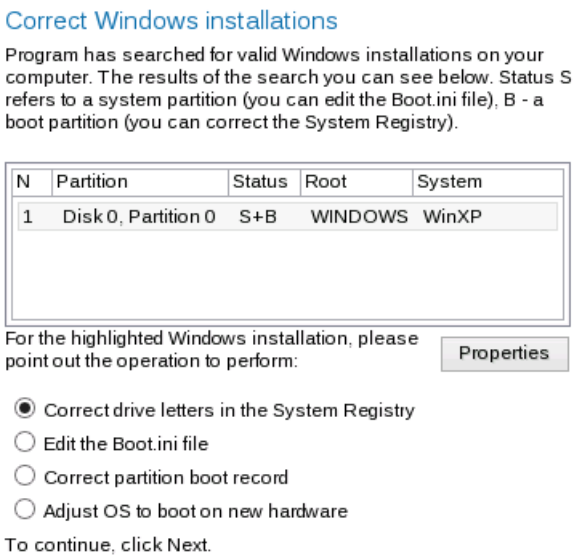
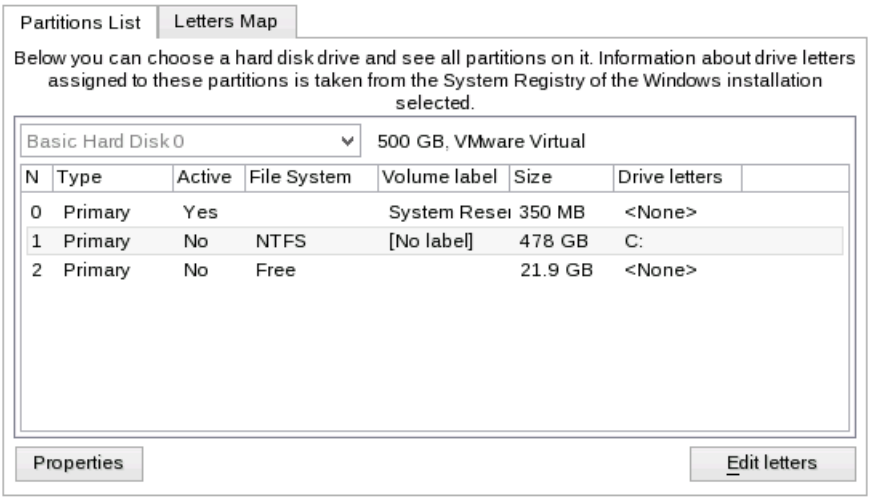
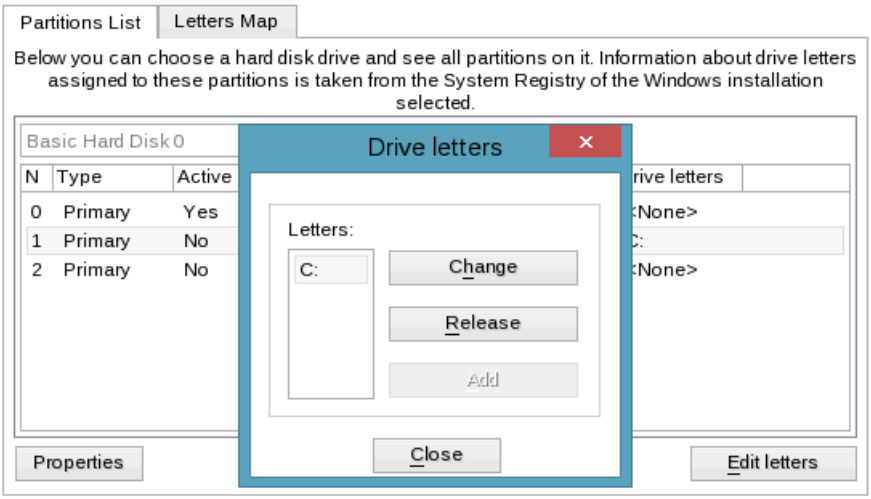

Correct Windows installations
Program has searched for valid Windows installations on your computer. The results of the search you can see below. Status S refers to a system partition (you can edit the Boot.ini file), B - a boot partition (you can correct the System Registry).
N
Partition
Status
Root
System
1
Disk 0, Partition 0
S+B
WINDOWS
WinXP
For the highlighted Windows installation, please point out the operation to perform:
Properties
Correct drive letters in the System Registry
Edit the Boot.ini file
Correct partition boot record
Adjust OS to boot on new hardware
To continue, click Next.

8. On the next page choose a hard disk from the pull-down list (if several), then the required partition. If you're not sure which installation you need, please use the Properties button to get more info on the selected item.



9. Click the Edit Letters button to correct an existing drive letter or assign a new one in the Windows System Registry.


Partitions List
Letters Map
Below you can choose a hard disk drive and see all partitions on it. Information about drive letters assigned to these partitions is taken from the System Registry of the Windows installation selected.
Basic Hard Disk 0
Drive letters
Letters:
C:
Change
Release
Add
Close
Properties
Edit letters

10. Once you've assigned the appropriate drive letter, close the dialog, then click the Apply button.
11. Confirm the operation.

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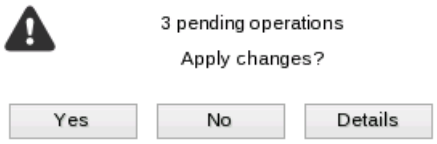
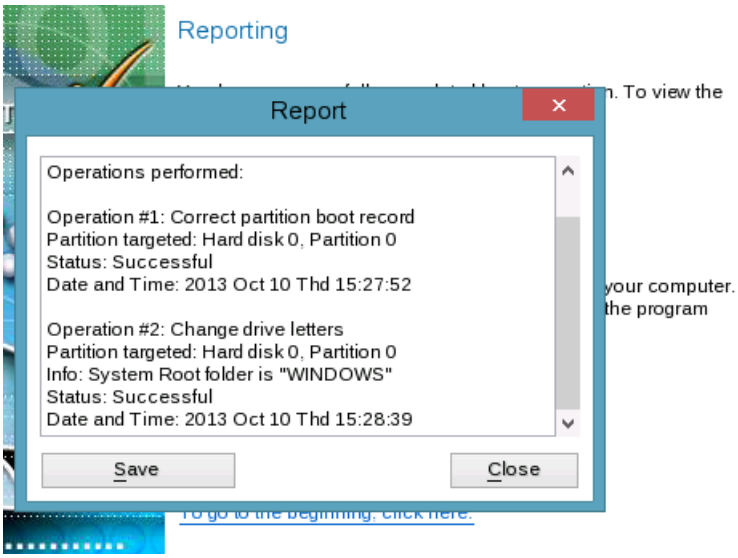


12. After the operation is completed click the Report button to see a well informative summary page. The program also enables to store the resulted report. To do that, just press the Save button and choose the exact location in the opened dialog.


Reporting
Report
Operations performed:
Operation #1: Correct partition boot record
Partition targeted: Hard disk 0, Partition 0
Status: Successful
Date and Time: 2013 Oct 10 Thd 15:27:52
Operation #2: Change drive letters
Partition targeted: Hard disk 0, Partition 0
Info: System Root folder is "WINDOWS"
Status: Successful
Date and Time: 2013 Oct 10 Thd 15:28:39
Save
Close

13. Click the Finish button to close Boot Corrector.
14. Reboot the computer.

Retrieving/Transferring Individual Files and Folders

Copying of data from the corrupted system disk to another hard disk

To retrieve valuable information from your hard disk and copy it to another hard disk when the system fails to boot, please do the following:

1. Connect the second hard disk to the computer.
2. Start up the computer from our Linux/DOS recovery media.

Please use Recovery Media Builder to prepare Paragon's recovery environments on CD/DVD, flash, or in an ISO-image.

To automatically boot from the recovery media please make sure the on-board BIOS is set up to boot from CD/USB first.

---

3. In the boot menu select **Normal Mode** to use the Linux recovery environment (more preferable) or **Safe Mode** to use the PTS DOS recovery environment (in case you've got problems with Linux). Moreover you've got the option to boot into the **Low-Graphics Safe Mode** (PTS DOS safe mode) to cope with a serious hardware incompatibility. In this case, only the minimal set of drivers will be included, like hard disk, monitor, and keyboard drivers. This mode has simple graphics and a simple menu.

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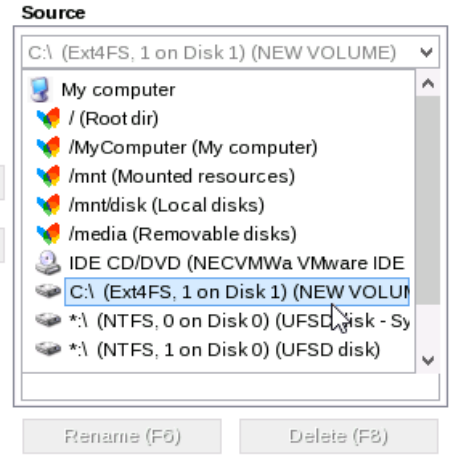
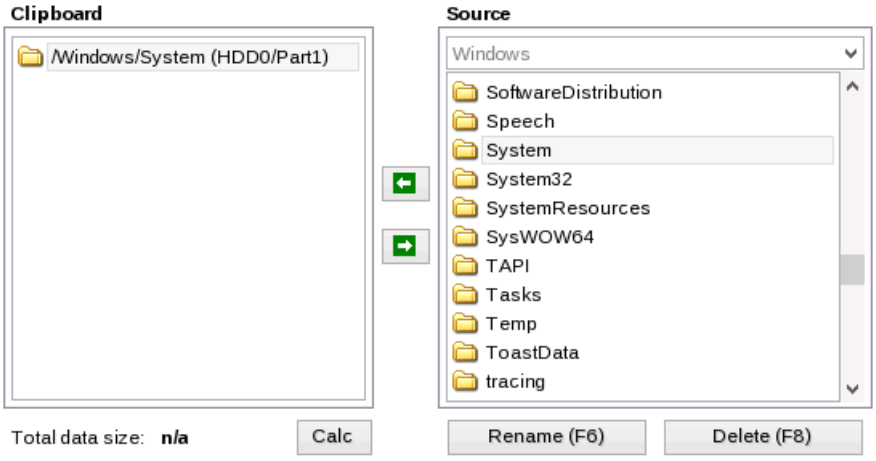
By default the Normal Mode will be automatically initiated after a 10 second idle period.

4. In the Linux launch menu select the File Transfer Wizard. You can find the same wizard in PTS DOS as well.
5. On the Wizard's Welcome page, click the Next button.
6. Select a disk where the files you need are stored from the pull-down list in the right pane of the page.

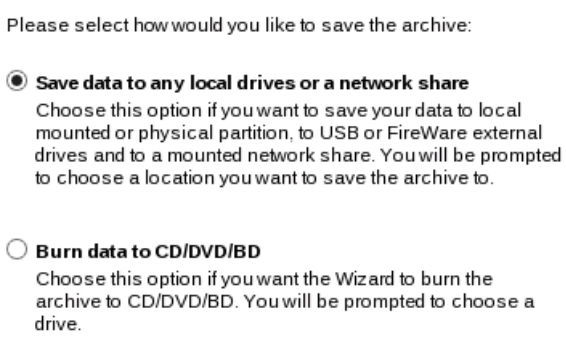

Source
C:\ (Ext4FS, 1 on Disk 1) (NEW VOLUME)
My computer
/ (Root dir)
/MyComputer (My computer)
/mnt (Mounted resources)
/mnt/disk (Local disks)
/media (Removable disks)
IDE CD/DVD (NECVMWa VMware IDE
C:\ (Ext4FS, 1 on Disk 1) (NEW VOLU
*:\ (NTFS, 0 on Disk 0) (UFSD
*:\ (NTFS, 1 on Disk 0) (UFSD disk)
Rename (F6)
Delete (F8)

7. Select files you want to copy and place them to Clipboard by pressing the left arrow-button.



Click the Calc button to estimate the resulted data size.

8. On the Select Destination Type, choose the way the data will be stored. Select the **Save data to any local drive or a network share** item.


Please select how would you like to save the archive:
Save data to any local drives or a network share
Choose this option if you want to save your data to local mounted or physical partition, to USB or FireWare external drives and to a mounted network share. You will be prompted to choose a location you want to save the archive to.
Burn data to CD/DVD/BD
Choose this option if you want the Wizard to burn the archive to CD/DVD/BD. You will be prompted to choose a drive.

9. On the Select Destination Path page, select a hard disk to copy the data to by pressing the standard browse button [...].

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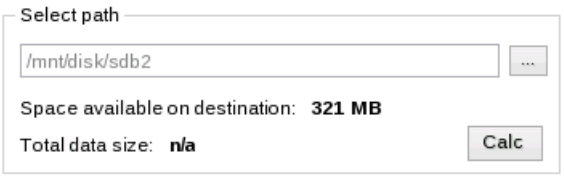
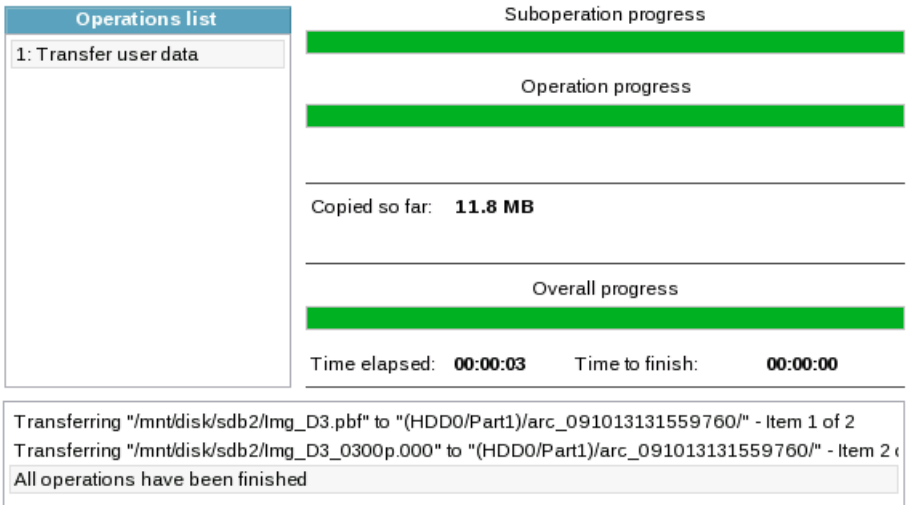


10. On the Transfer Summary page check all parameters of the operation. Click the Next button to accomplish the operation.
11. In the Progress window you can see in real-time a detailed report on all actions carried out by the program.


Operations list
1: Transfer user data
Suboperation progress
Operation progress
Copied so far: 11.8 MB
Overall progress
Time elapsed: 00:00:03
Time to finish: 00:00:00
Transferring "/mnt/disk/sdb2/Img_D3.pbf" to "(HDD0/Part1)/arc_091013131559760/" - Item 1 of 2
Transferring "/mnt/disk/sdb2/Img_D3_0300p.000" to "(HDD0/Part1)/arc_091013131559760/" - Item 2
All operations have been finished

12. After the operation is completed, close the wizard by pressing the appropriate button.
13. Turn off the computer.

This operation can also be accomplished with our recovery media.

Burning of data from the corrupted system disk to CD/DVD

To retrieve valuable information from your hard disk and burn it to CD/DVD when the system fails to boot, please do the following:

1. Start up the computer from our Linux/DOS recovery media.

Please use Recovery Media Builder to prepare Paragon's recovery environments on CD/DVD, flash, or in an ISO-image.

To automatically boot from the recovery media please make sure the on-board BIOS is set up to boot from CD/USB first.

---

2. In the boot menu select **Normal Mode** to use the Linux recovery environment, since it's the only mode that enables to burn CD/DVD discs.

By default the Normal Mode will be automatically initiated after a 10 second idle period.

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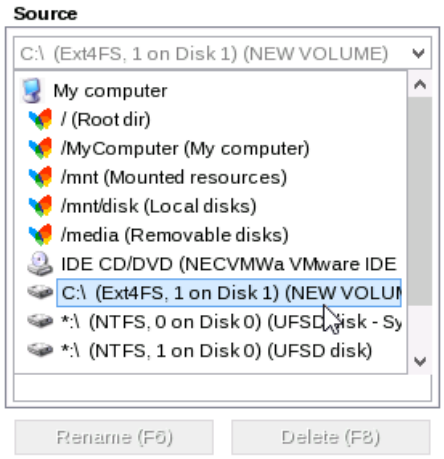
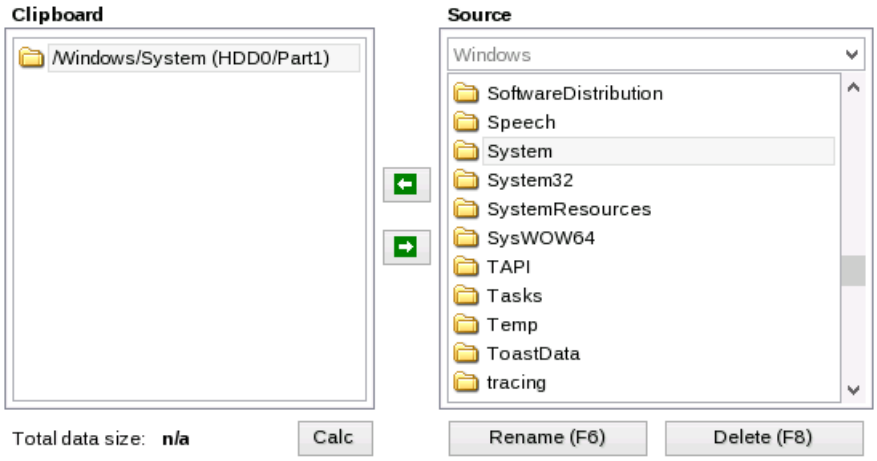
3. In the Linux launch menu select the File Transfer Wizard. You can find the same wizard in PTS DOS as well.
4. On the Wizard's Welcome page, click the Next button.
5. Select a disk where the files you need are stored from the pull-down list in the right pane of the page.

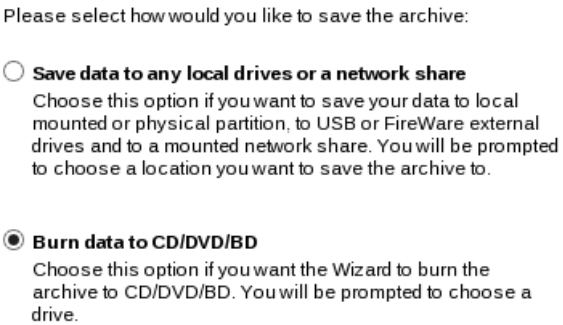

Source
C:\ (Ext4FS, 1 on Disk 1) (NEW VOLUME)
My computer
/ (Root dir)
/MyComputer (My computer)
/mnt (Mounted resources)
/mnt/disk (Local disks)
/media (Removable disks)
IDE CD/DVD (NECVMWa VMware IDE
C:\ (Ext4FS, 1 on Disk 1) (NEW VOLU
*:\ (NTFS, 0 on Disk 0) (UFSD
*:\ (NTFS, 1 on Disk 0) (UFSD disk)
Rename (F6)
Delete (F8)

6. Select files you want to copy and place them to Clipboard by pressing the left arrow-button.



Click the Calc button to estimate the resulted data size.

7. On the Select Destination Type, choose the way the data will be stored. Select the **Burn data to CD/DVD** item.


Please select how would you like to save the archive:
Save data to any local drives or a network share
Choose this option if you want to save your data to local mounted or physical partition, to USB or FireWare external drives and to a mounted network share. You will be prompted to choose a location you want to save the archive to.
Burn data to CD/DVD/BD
Choose this option if you want the Wizard to burn the archive to CD/DVD/BD. You will be prompted to choose a drive.

8. On the Choose a Recorder page, select a recorder from the list of available devices and then set a volume label by entering it in the appropriate field.

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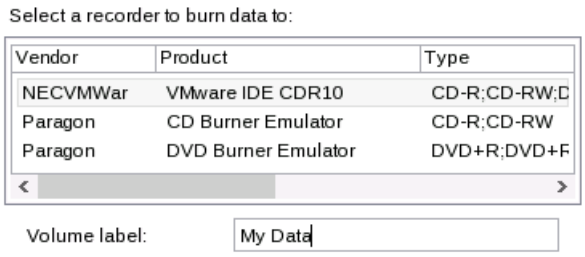
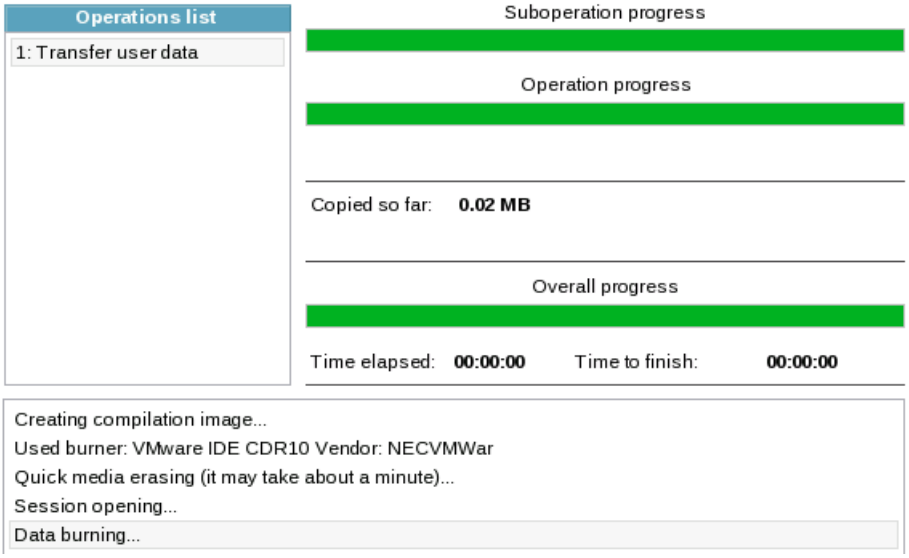


9. On the Transfer Summary page check all parameters of the operation. Click the Next button to accomplish the operation.
10. In the Progress window you can see in real-time a detailed report on all actions carried out by the program.



11. After the operation is completed, close the wizard by pressing the appropriate button.
12. Turn off the computer.

This operation can also be accomplished with our recovery media.

Copying of data from a backup to the corrupted system partition

The system fails to boot since some files are damaged. If you have a backup of the system partition, you can recopy these files to make the system be operable again:

1. Start up the computer from our Linux/DOS recovery media.

Please use Recovery Media Builder to prepare Paragon's recovery environments on CD/DVD, flash, or in an ISO-image.

To automatically boot from the recovery media please make sure the on-board BIOS is set up to boot from CD/USB first.

---

2. In the boot menu select **Normal Mode** to use the Linux recovery environment (more preferable) or **Safe Mode** to use the PTS DOS recovery environment (in case you've got problems with Linux). Moreover you've got the option to boot into the **Low-Graphics Safe Mode** (PTS DOS safe mode) to cope with a serious hardware

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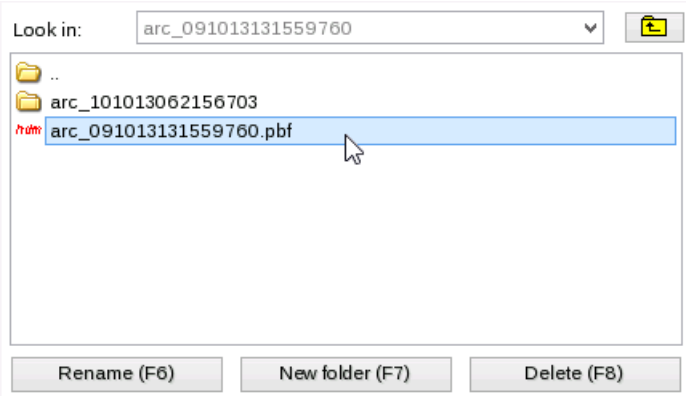
incompatibility. In this case, only the minimal set of drivers will be included, like hard disk, monitor, and keyboard drivers. This mode has simple graphics and a simple menu.

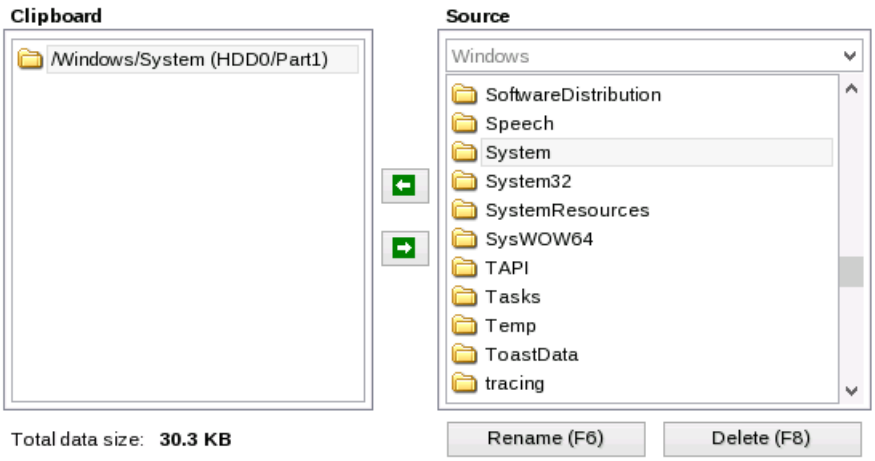
By default the Normal Mode will be automatically initiated after a 10 second idle period.

3. In the Linux launch menu select the File Transfer Wizard. You can find the same wizard in PTS DOS as well.
4. On the Wizard's Welcome page, click the Next button.
5. Select a disk where the system backup is stored from the pull-down list in the right pane of the page.



6. Double click on the required backup to open.

7. Select files you want to copy and place them to Clipboard by pressing the left arrow-button.



Click the Calc button to estimate the resulted data size.

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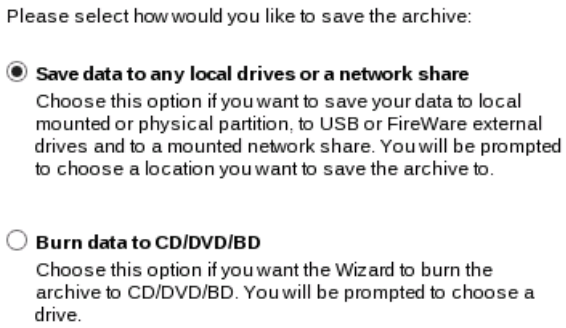
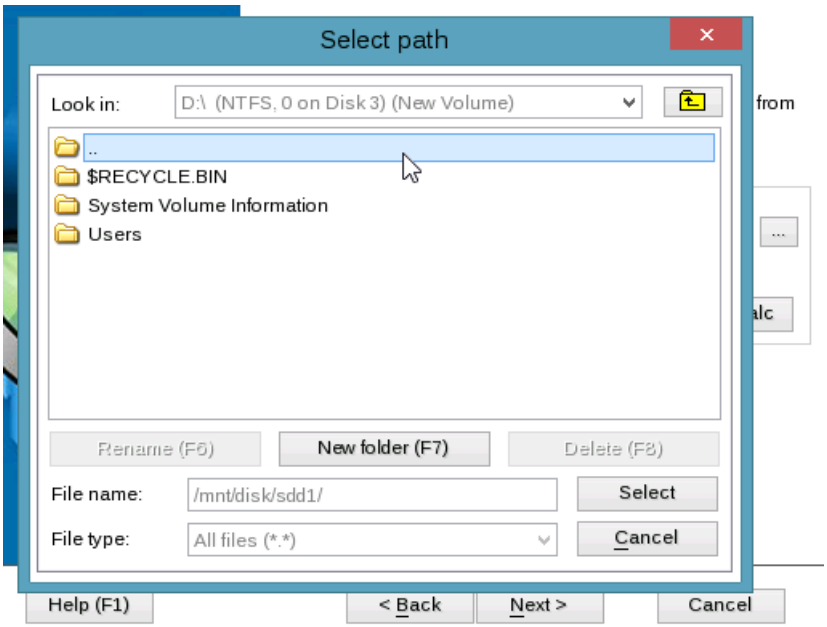
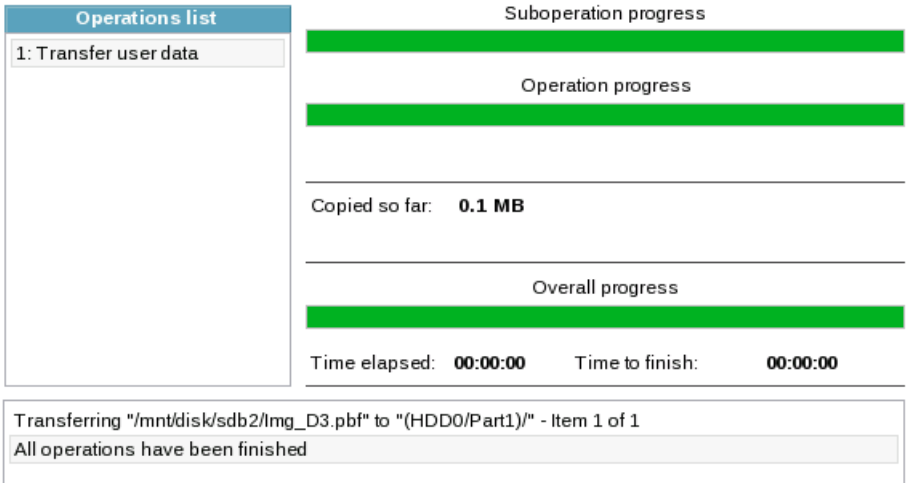
8. On the Select Destination Type, choose the way the data will be stored. Select the **Save data to any local drive or a network share** item.


Please select how would you like to save the archive:
Save data to any local drives or a network share
Choose this option if you want to save your data to local mounted or physical partition, to USB or FireWare external drives and to a mounted network share. You will be prompted to choose a location you want to save the archive to.
Burn data to CD/DVD/BD
Choose this option if you want the Wizard to burn the archive to CD/DVD/BD. You will be prompted to choose a drive.

9. On the Select Destination Path page, select your system disk to copy the data to by pressing the standard browse button [...].



10. On the Transfer Summary page check all parameters of the operation. Click the Next button to accomplish the operation.
11. In the Progress window you can see in real-time a detailed report on all actions carried out by the program.



12. After the operation is completed, close the wizard by pressing the appropriate button.
13. Turn off the computer.

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This operation can also be accomplished with our recovery media.

System Migration Scenarios

Migrating system to a new HDD (up to 2.2TB in size)

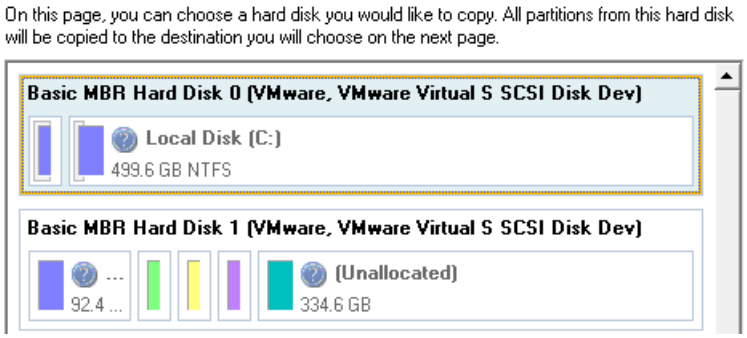
Let's assume that you've bought a new hard disk that is up to 2.2TB in capacity. It's faster and of much higher capacity than your current system disk, so it's quite natural you start thinking about system migration. We can help you do that.

To migrate your system to a hard disk that doesn't exceed the 2.2TB capacity limit, please do the following:

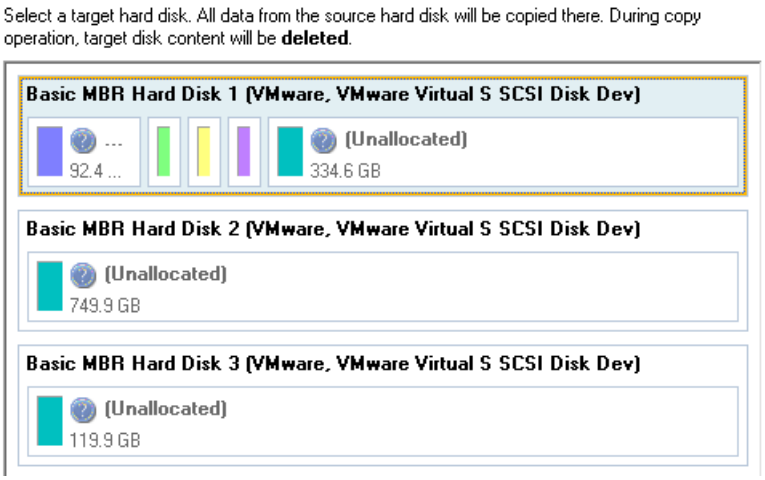
1. Connect both source and destination disks to the computer.
2. Turn on the computer.
3. Click the **Copy & Migration** tab on the Ribbon Panel, then select **Copy Hard Disk**.

There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.

4. On the Wizard's Welcome page, click the Next button.
5. On the Select Hard Disk to Copy page, select a source disk (a hard disk you want to copy).


On this page, you can choose a hard disk you would like to copy. All partitions from this hard disk will be copied to the destination you will choose on the next page.
Basic MBR Hard Disk 0 (VMware, VMware Virtual S SCSI Disk Dev)
Local Disk (C:)
499.6 GB NTFS
Basic MBR Hard Disk 1 (VMware, VMware Virtual S SCSI Disk Dev)
...
92.4 ...
(Unallocated)
334.6 GB

6. On the Select Target Hard Disk page, select a destination disk (a hard disk to copy contents of the source disk).


Select a target hard disk. All data from the source hard disk will be copied there. During copy operation, target disk content will be deleted.
Basic MBR Hard Disk 1 (VMware, VMware Virtual S SCSI Disk Dev)
...
92.4 ...
(Unallocated)
334.6 GB
Basic MBR Hard Disk 2 (VMware, VMware Virtual S SCSI Disk Dev)
(Unallocated)
749.9 GB
Basic MBR Hard Disk 3 (VMware, VMware Virtual S SCSI Disk Dev)
(Unallocated)
119.9 GB

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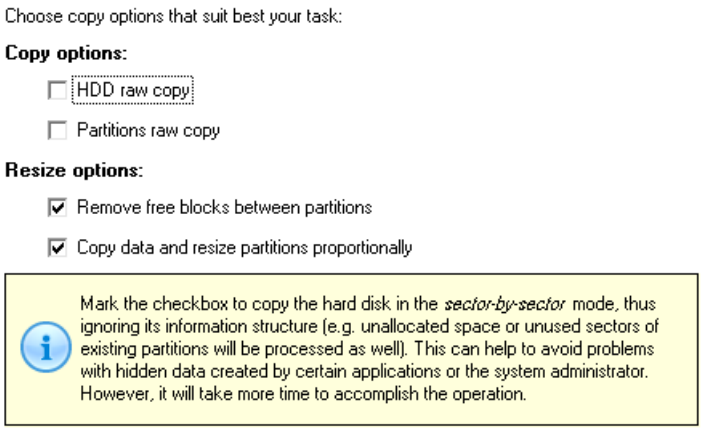
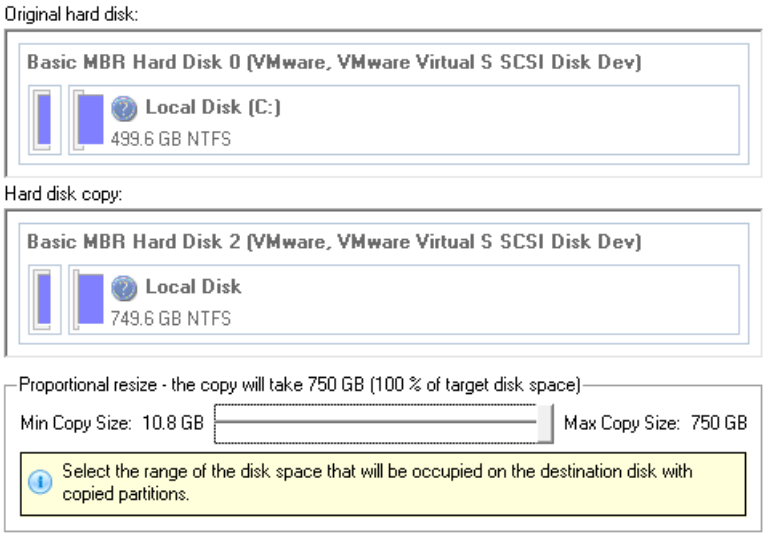
During the operation all contents of the destination disk will be deleted.

7. On the next page of the wizard, define the copy options. In our case we'd rather copy data with a proportional resize to occupy the entire disk. If you've got to do with a 64-bit Windows configured to the uEFI boot mode, the **Create new EFI boot entry for destination drive** option will become available for you to define what instance of Windows OS you'd like to boot from once the operation is over. Anyway you can specify a bootable device at any time through Boot Corrector.


Choose copy options that suit best your task:
Copy options:
HDD raw copy
Partitions raw copy
Resize options:
Remove free blocks between partitions
Copy data and resize partitions proportionally
Mark the checkbox to copy the hard disk in the sector-by-sector mode, thus ignoring its information structure (e.g. unallocated space or unused sectors of existing partitions will be processed as well). This can help to avoid problems with hidden data created by certain applications or the system administrator. However, it will take more time to accomplish the operation.

The 'Create new EFI boot entry for destination drive' option will be available to the user only if the target disk becomes Bootable GPT as a result of the migration process.

8. On the Revise Copy Results page review all parameters of the operation.


Original hard disk:
Basic MBR Hard Disk 0 (VMware, VMware Virtual S SCSI Disk Dev)
Local Disk (C:)
499.6 GB NTFS
Hard disk copy:
Basic MBR Hard Disk 2 (VMware, VMware Virtual S SCSI Disk Dev)
Local Disk
749.6 GB NTFS
Proportional resize - the copy will take 750 GB (100 % of target disk space)
Min Copy Size: 10.8 GB
Max Copy Size: 750 GB
Select the range of the disk space that will be occupied on the destination disk with copied partitions.

9. Complete the wizard and then apply the pending changes.
10. When copying is completed, shut down the computer.
11. Disconnect (physically) the source hard disk.
12. Boot the computer from the destination hard disk.

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To make Windows bootable on different hardware, please additionally complete the P2P Adjust OS Wizard.

Making system bootable on different hardware (P2P Adjust OS)

Let's assume you had to migrate to a new hardware platform. You connected your system hard disk to the brand new PC and tried to start up the operating system - you do know for sure now that this operation had been doomed to failure from the very beginning. With our program you can easily tackle this naughty problem.

Before you start, please make sure the following conditions are met:

- You've got drivers for the new hardware ready to use, not zipped or in .exe files.
- Your OS is unrolled on the new computer, not in a backup image.

To make a Windows physical system bootable on different hardware, please do the following:

1. Start up the computer from the WinPE recovery media.

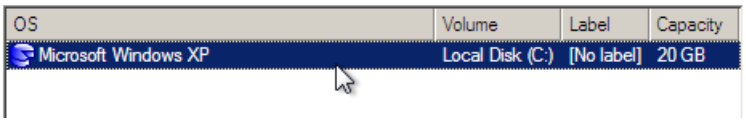
Please use Recovery Media Builder to prepare Paragon's recovery environments on CD/DVD, flash, or in an ISO-image.

To automatically boot from the recovery media please make sure the on-board BIOS is set up to boot from CD/USB first.

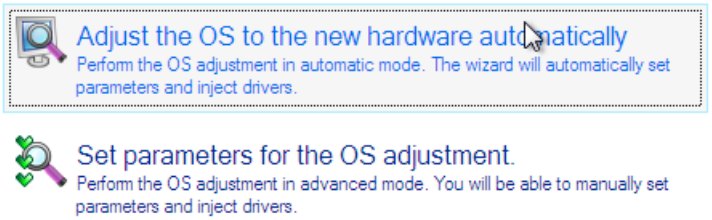
2. Launch the **P2P Adjust OS Wizard**.

The WinPE based environment offers excellent hardware support. However in case it doesn't have a driver for your disk controller, your hard disks will be unavailable. Please consult the Adding specific drivers scenario to know how to tackle this issue.

3. On the Wizard's Welcome page, click the Next button.
4. From the list of all found Windows systems (if several) select one you need to adjust to the new hardware. If you're willing to adjust them all, just re-launch this wizard for each.



5. There are two execution modes to choose from: **fully automatic** and **advance**. Below we will go set-by-step through the automatic scenario to show the whole process, and then take a closer look at specifics of the advance scenario.


Adjust the OS to the new hardware automatically
Perform the OS adjustment in automatic mode. The wizard will automatically set parameters and inject drivers.
Set parameters for the OS adjustment.
Perform the OS adjustment in advanced mode. You will be able to manually set parameters and inject drivers.

6. Select **Adjust the OS to the new hardware automatically**.

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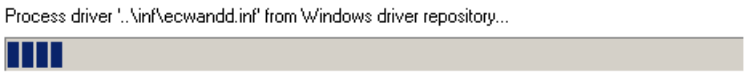
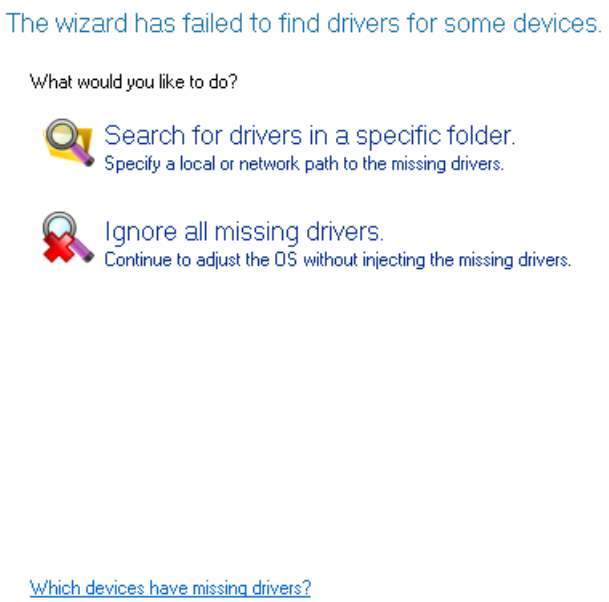
7. The wizard will automatically accomplish all the necessary actions.



8. The only action that might be required from your side is to set a path to an additional driver repository in case the wizard has failed to find drivers for some boot critical devices in the built-in Windows repository. Generally together with new hardware you get its drivers for different operating systems on removable media (mostly CD or DVD). By collecting all these drivers in one folder you can let the wizard automatically pick and install only those required for your OS. Select **Search for drivers in a specific folder**.


The wizard has failed to find drivers for some devices.
What would you like to do?
Search for drivers in a specific folder.
Specify a local or network path to the missing drivers.
Ignore all missing drivers.
Continue to adjust the OS without injecting the missing drivers.
Which devices have missing drivers?

Click on the link at the bottom of the page to see what boot critical devices have no drivers. The wizard names all devices according to their model description, not some alphanumeric code, which is very convenient.

9. Though you've got the option to continue without injecting missing drivers for boot critical devices (The **Ignore all missing drivers** option), we strongly recommend you not to do it. Otherwise we cannot guarantee your Windows will start up on the new hardware.

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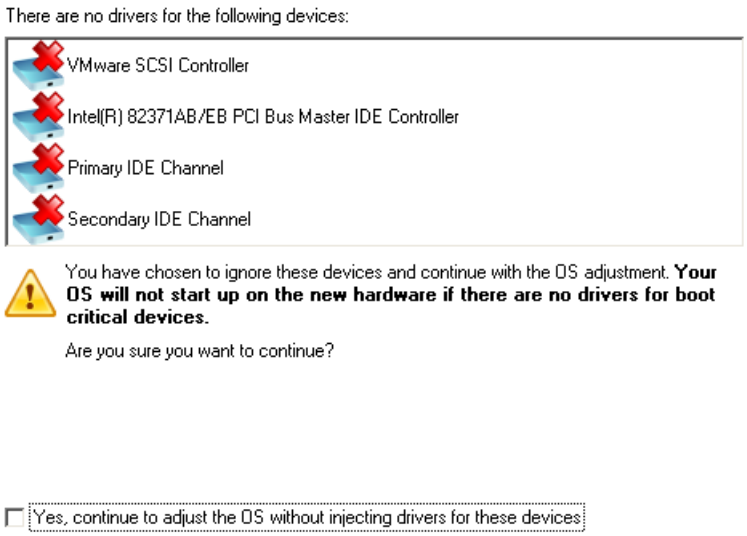
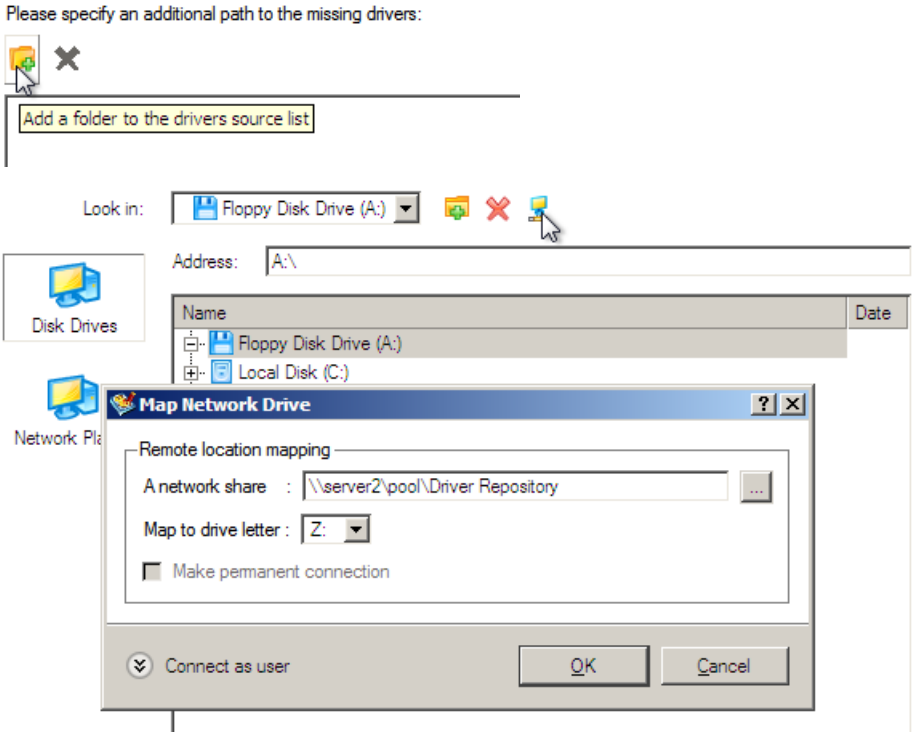
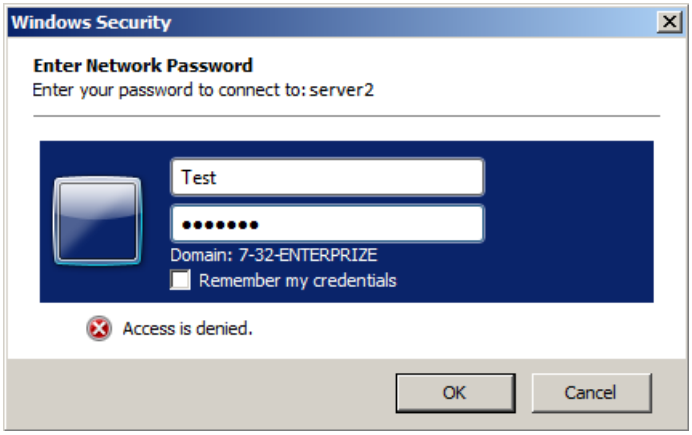

There are no drivers for the following devices:
VMware SCSI Controller
Intel(R) 82371AB/EB PCI Bus Master IDE Controller
Primary IDE Channel
Secondary IDE Channel
You have chosen to ignore these devices and continue with the OS adjustment. Your OS will not start up on the new hardware if there are no drivers for boot critical devices.
Are you sure you want to continue?
Yes, continue to adjust the OS without injecting drivers for these devices

10. The wizard can search for drivers on a local disk or a mapped network share. In our case it's on a network share, this is why we need to map it first.





11. When done, we can select it as target.

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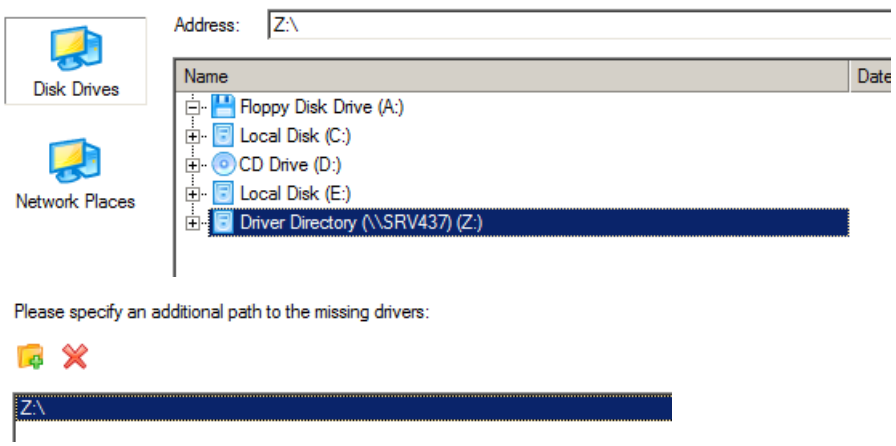


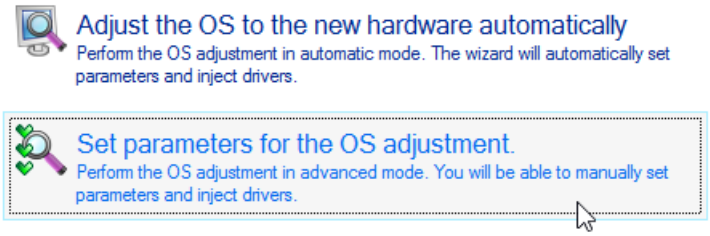
The wizard enables to specify several driver repositories.

12. If the wizard has found all missing drivers, it will ask you to confirm the operation. Apply the changes to complete.

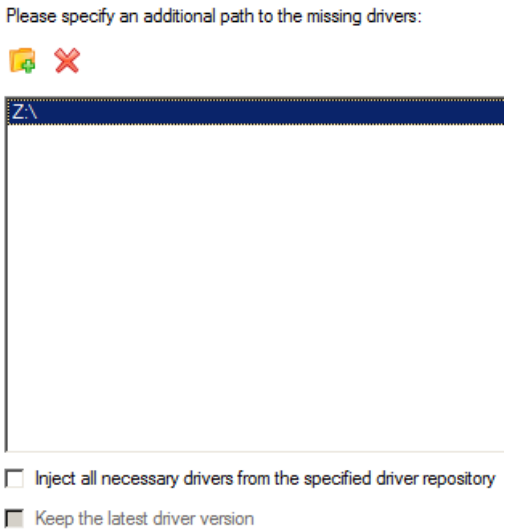
After the operation is completed the system will be bootable on the new hardware. After the startup, Windows will initiate reconfiguration of all Plug'n'Play devices. It's a standard procedure, so please don't worry and prepare the latest drivers at this step to get the most out of the system.

Advance scenario specifics

1. To launch the advance mode, select **Set parameters for the OS adjustment**.


Adjust the OS to the new hardware automatically
Perform the OS adjustment in automatic mode. The wizard will automatically set parameters and inject drivers.
Set parameters for the OS adjustment.
Perform the OS adjustment in advanced mode. You will be able to manually set parameters and inject drivers.

2. When setting additional driver repositories, you can specify how to process drivers for found hardware.


Please specify an additional path to the missing drivers:
Z:\
Inject all necessary drivers from the specified driver repository
Keep the latest driver version

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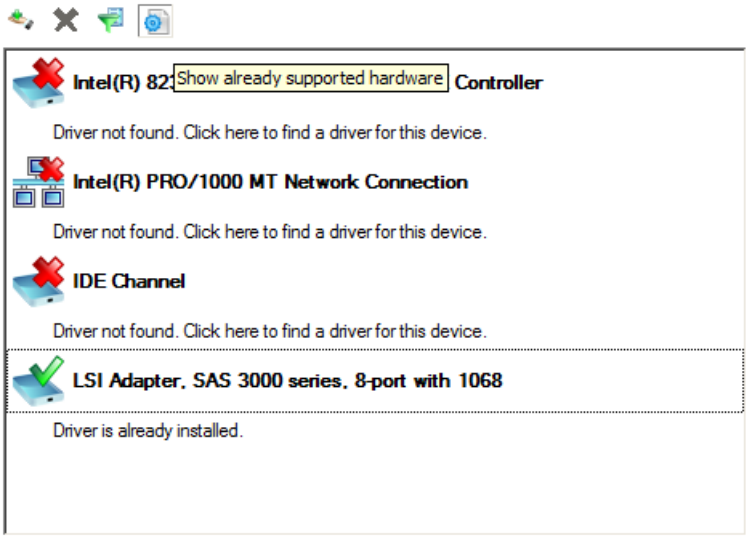
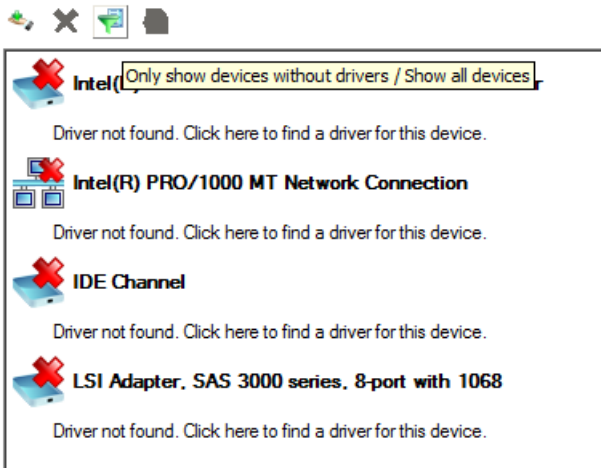
- **Inject all necessary drivers…** Mark the checkbox to force injection of all drivers for your devices from the given driver repository(s), even if there are already installed drivers for some hardware. Please use this option if you suspect any of the installed drivers of not matching your hardware.
- **Keep the latest driver version**. Mark the checkbox to keep the latest version of drivers during the forced re-injection. You can use this option only when the above option is active.

3. Just before the OS adjustment, you can additionally:

- View all found hardware devices and their driver status by clicking . The wizard names all devices according to their model description, not some alphanumeric code, which is very convenient. So you can compare the listed devices with the given hardware to make sure the wizard has analyzed your system correctly.


Show already supported hardware
Intel(R) 82 Controller
Driver not found. Click here to find a driver for this device.
Intel(R) PRO/1000 MT Network Connection
Driver not found. Click here to find a driver for this device.
IDE Channel
Driver not found. Click here to find a driver for this device.
LSI Adapter, SAS 3000 series, 8-port with 1068
Driver is already installed.

- Filter devices without drivers by clicking . Unlike the automatic mode, where only boot critical devices (storage controllers) without drivers are being reported, here you can view and inject drivers for network cards as well.


Only show devices without drivers / Show all devices
Driver not found. Click here to find a driver for this device.
Intel(R) PRO/1000 MT Network Connection
Driver not found. Click here to find a driver for this device.
IDE Channel
Driver not found. Click here to find a driver for this device.
LSI Adapter, SAS 3000 series, 8-port with 1068
Driver not found. Click here to find a driver for this device.

- Add a driver for each device that lacks it by clicking on the device, then browsing for the required location. The wizard will then match the device with drivers inside the given location and pick the right one.

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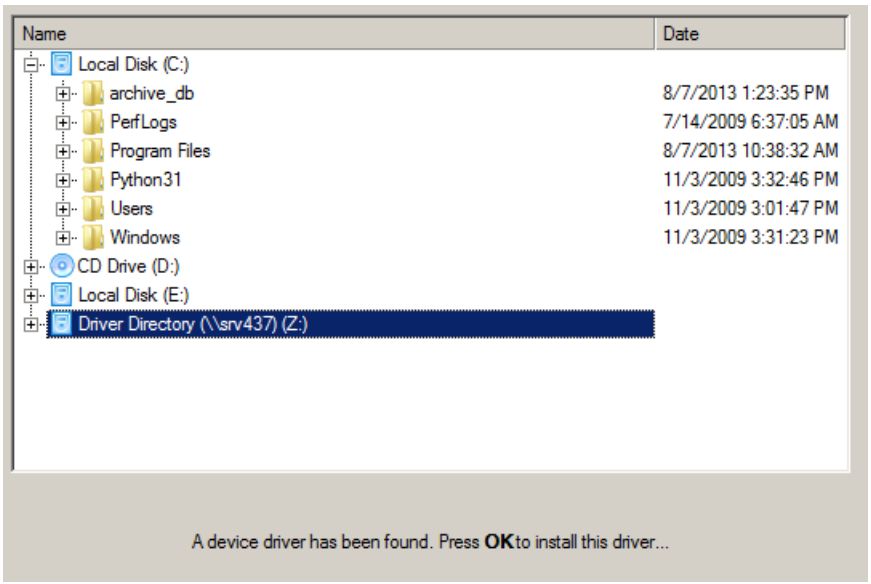
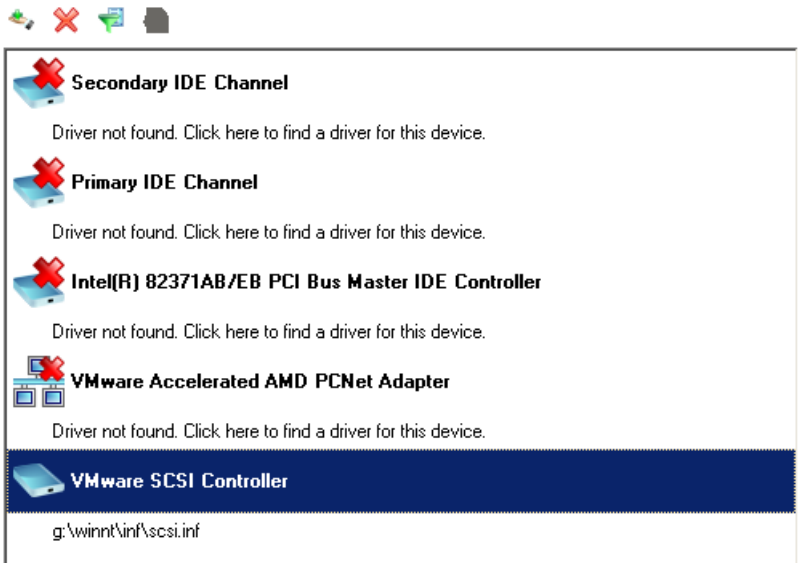
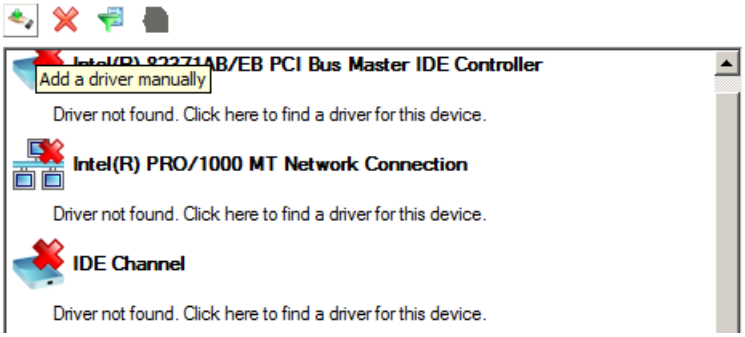



Secondary IDE Channel
Driver not found. Click here to find a driver for this device.
Primary IDE Channel
Driver not found. Click here to find a driver for this device.
Intel(R) 82371AB/EB PCI Bus Master IDE Controller
Driver not found. Click here to find a driver for this device.
VMware Accelerated AMD PCNet Adapter
Driver not found. Click here to find a driver for this device.
VMware SCSI Controller
g:\winnt\inf\scsi.inf

- Manually add a driver for a device that has not been found by our wizard by clicking , then specifying the required .INF file.


Add a driver manually
Driver not found. Click here to find a driver for this device.
Intel(R) PRO/1000 MT Network Connection
Driver not found. Click here to find a driver for this device.
IDE Channel
Driver not found. Click here to find a driver for this device.

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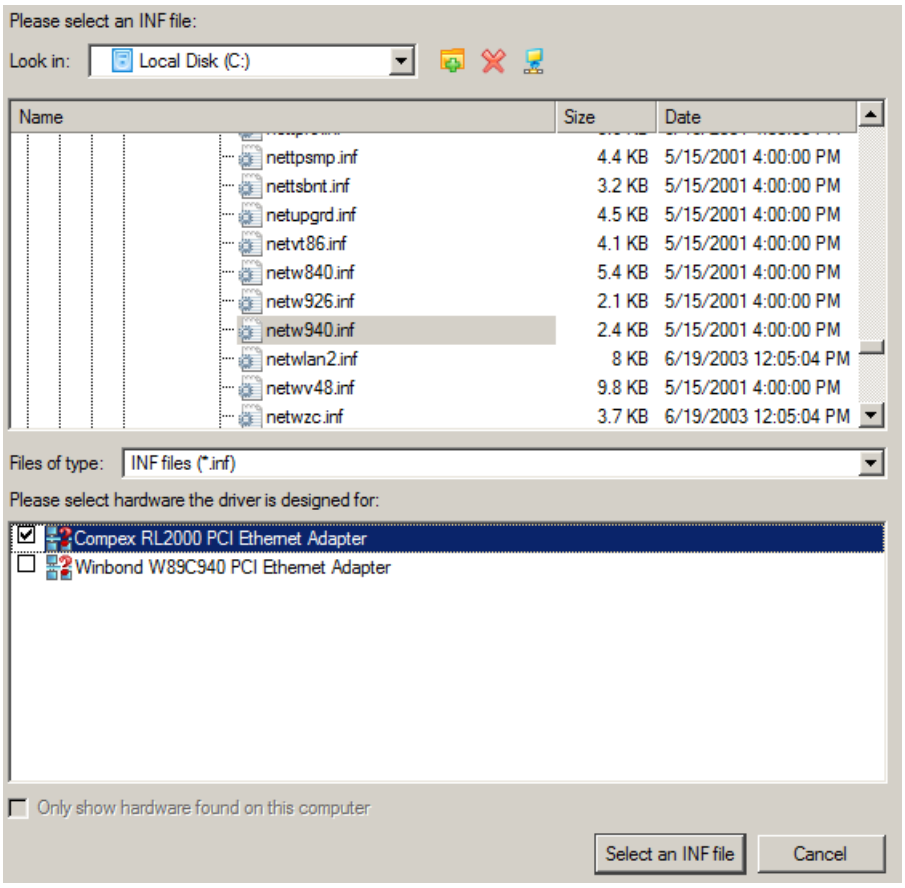
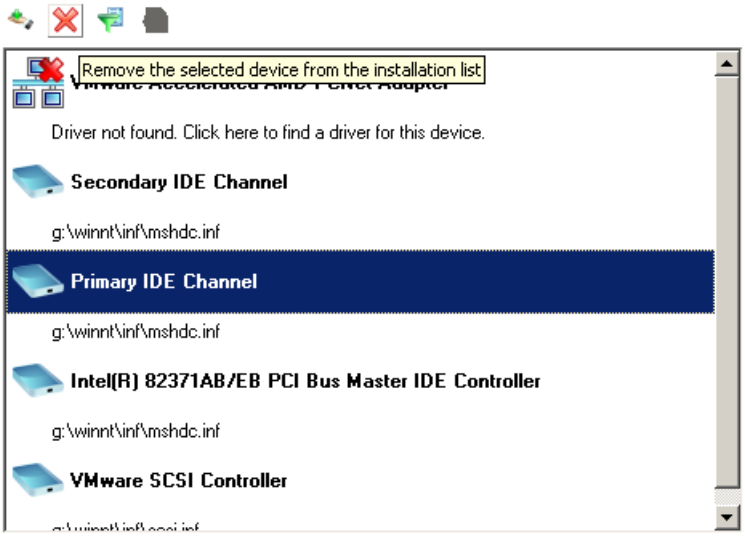

Please select an INF file:
Look in:
Local Disk (C:)
Name
Size
Date
nettpsmp.inf 4.4 KB 5/15/2001 4:00:00 PM
nettsbnt.inf 3.2 KB 5/15/2001 4:00:00 PM
netupgrd.inf 4.5 KB 5/15/2001 4:00:00 PM
netvt86.inf 4.1 KB 5/15/2001 4:00:00 PM
netw840.inf 5.4 KB 5/15/2001 4:00:00 PM
netw926.inf 2.1 KB 5/15/2001 4:00:00 PM
netw940.inf 2.4 KB 5/15/2001 4:00:00 PM
netwlan2.inf 8 KB 6/19/2003 12:05:04 PM
netwv48.inf 9.8 KB 5/15/2001 4:00:00 PM
netwzc.inf 3.7 KB 6/19/2003 12:05:04 PM
Files of type:
INF files (*.inf)
Please select hardware the driver is designed for:
Compex RL2000 PCI Ethernet Adapter
Winbond W89C940 PCI Ethernet Adapter
Only show hardware found on this computer
Select an INF file
Cancel

When selecting an .INF file that contains several driver records for hardware you both, have in the system and don't have, you can filter the list by marking the appropriate checkbox.

- Remove a driver for a device, which has not been found in the system.


Remove the selected device from the installation list
Driver not found. Click here to find a driver for this device.
Secondary IDE Channel
g:\winnt\inf\mshdc.inf
Primary IDE Channel
g:\winnt\inf\mshdc.inf
Intel(R) 82371AB/EB PCI Bus Master IDE Controller
g:\winnt\inf\mshdc.inf
VMware SCSI Controller

Migrating a Windows 7 vhd

Let's assume you need to make your Windows 7 contained in a .vhd file start up on another computer. You've copied the virtual disk, added info on it to the BCD boot menu, then tried to start up the OS, but to no avail - your Windows goes BSOD with the 0x000007B error code. We can help you out with this naughty problem.

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To make a .vhd image of Windows 7 start up on different hardware, please do the following:

1. Start up the computer from the WinPE media.
2. Complete the P2P Adjust OS Wizard.

Extra Scenarios for WinPE

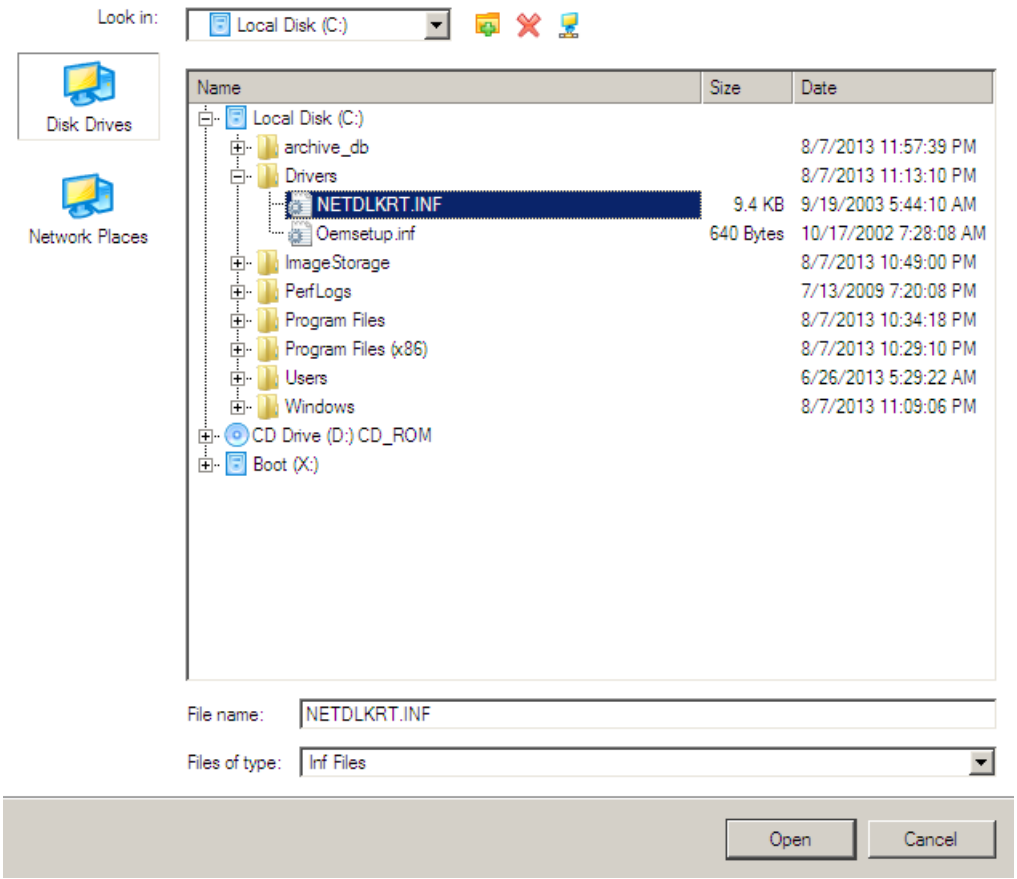
Please use Recovery Media Builder to prepare Paragon's recovery environments on CD/DVD, flash, or in an ISO-image.

Adding specific drivers

The WinPE based recovery environment offers excellent hardware support. Anyway you've got the option to add drivers for specific hardware with a handy dialog.

To add drivers for specific hardware, please do the following:

1. Click **Load Drivers**.
2. In the opened dialog browse for an .INF file of the required driver package located on a floppy disk, local disk, CD/DVD or a network share. Then click the **Open** button to initiate the operation



To know how to map a network share, please consult the Configuring network scenario.

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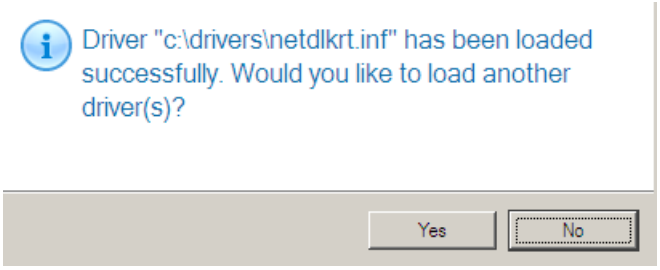
3. You will be notified on the successful accomplishment of the operation. Click **Yes** to load another driver or **No** to close the dialog.



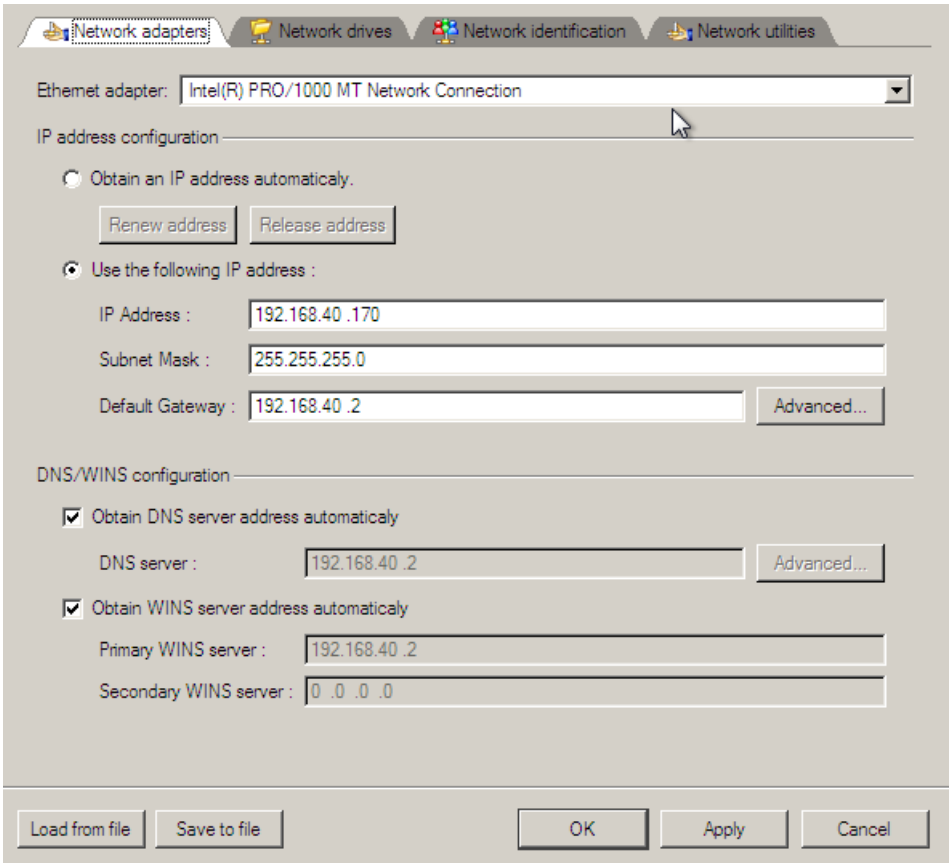
The WinPE recovery environment can either be 32- or 64-bit, so are to be drivers for injection.

Configuring network

If your local network has a DHCP server, a network connection will be automatically configured once the WinPE recovery environment has been started up. Otherwise you will need to do it manually with a handy dialog by providing an IP address, a network mask, default gateway, etc. Besides with its help you can easily map network shares.

To manually set up a network connection and map a network share, please do the following:

1. Click **Configure Network**.
2. In the opened dialog provide an IP address, a network mask, default gateway, etc. for your network device.



3. Click the **Network drivers** tab to map a network share.

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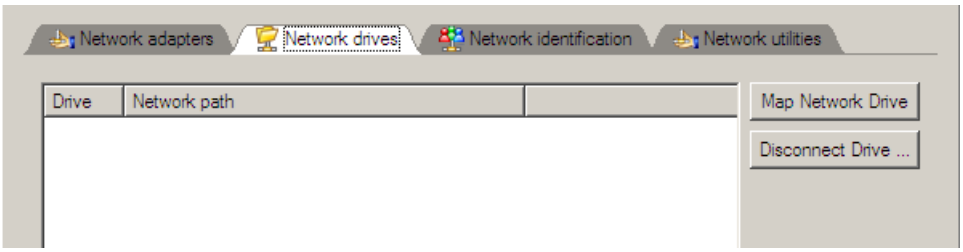
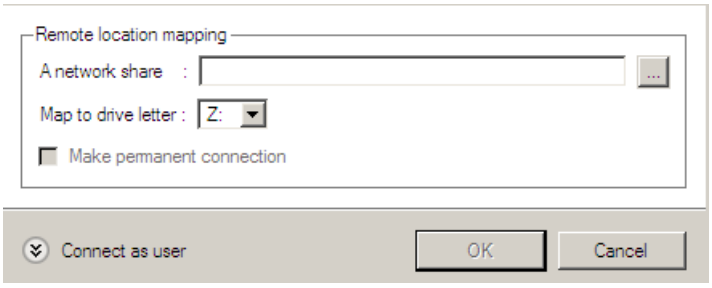


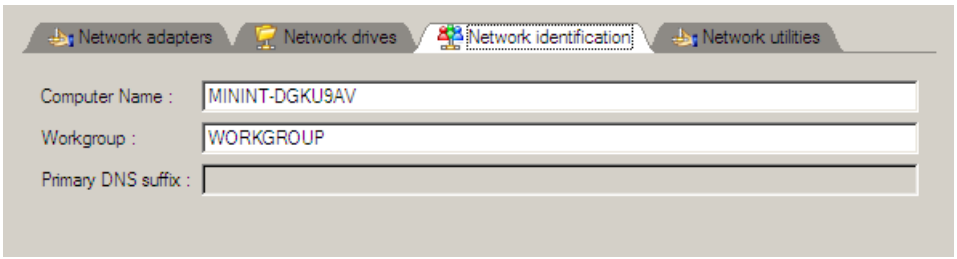
4. Click **Map Network Drive** and provide all the necessary information to map a network share in the opened dialog:



- Click the standard browse button [...] to browse for the required network share or manually enter a path to it;
- Define a letter from the pull-down list of available drive letters;
- Click the **Connect as user** button at the foot of the dialog page to specify a user name and password to access the selected network share if necessary.

By clicking **Disconnect Drive…** you can delete an existing network share if necessary.

5. Click the **Network identification** tab to change a network name of your computer (generated automatically) and a workgroup name.



6. By default, the wizard saves all network settings in the netconf.ini file located on the WinPE RAM drive, thus it will only be available until you restart the computer. However, you can just once configure your network device and then save this file to some other destination, for instance a local drive, and this way avoid constant re-configuration, just by providing a path to it. So Click **Save to file** to save the netconfig.ini file to the required destination.

Network troubleshooter

Network Configurator includes a traceroute/ping utility that enables to get detailed information on particular routes and measure transit delays of packets across an Internet Protocol (IP) network. So with its help you can easily track down problematic nodes.

1. If you need to ping some network host, please select **Ping**, then type in the required IP address or its name. Click **Start** when ready.

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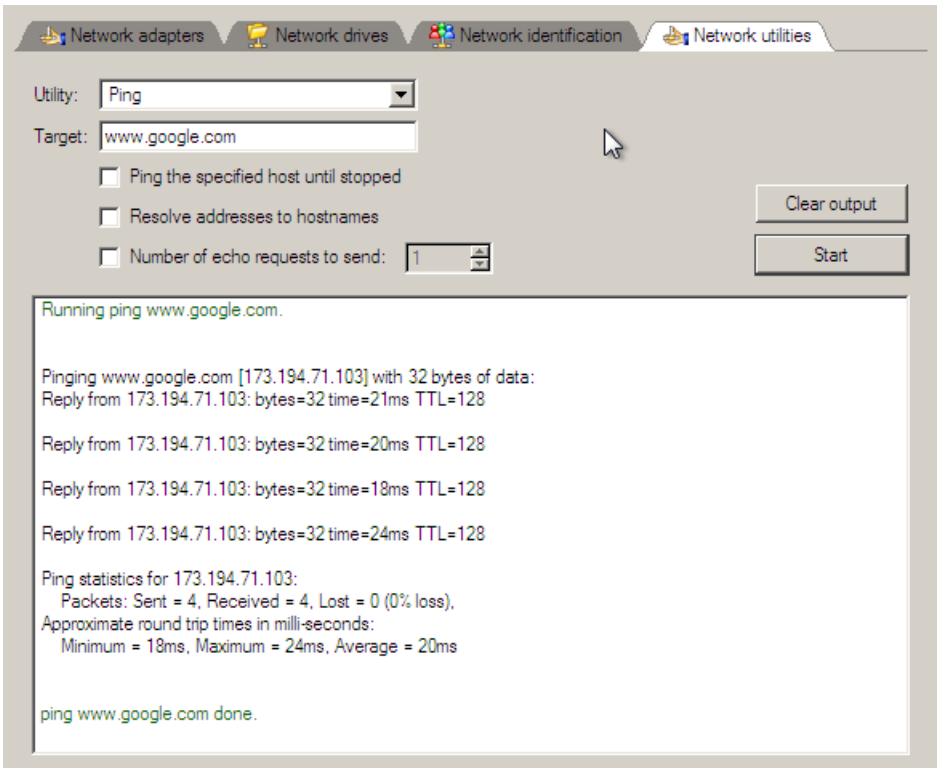
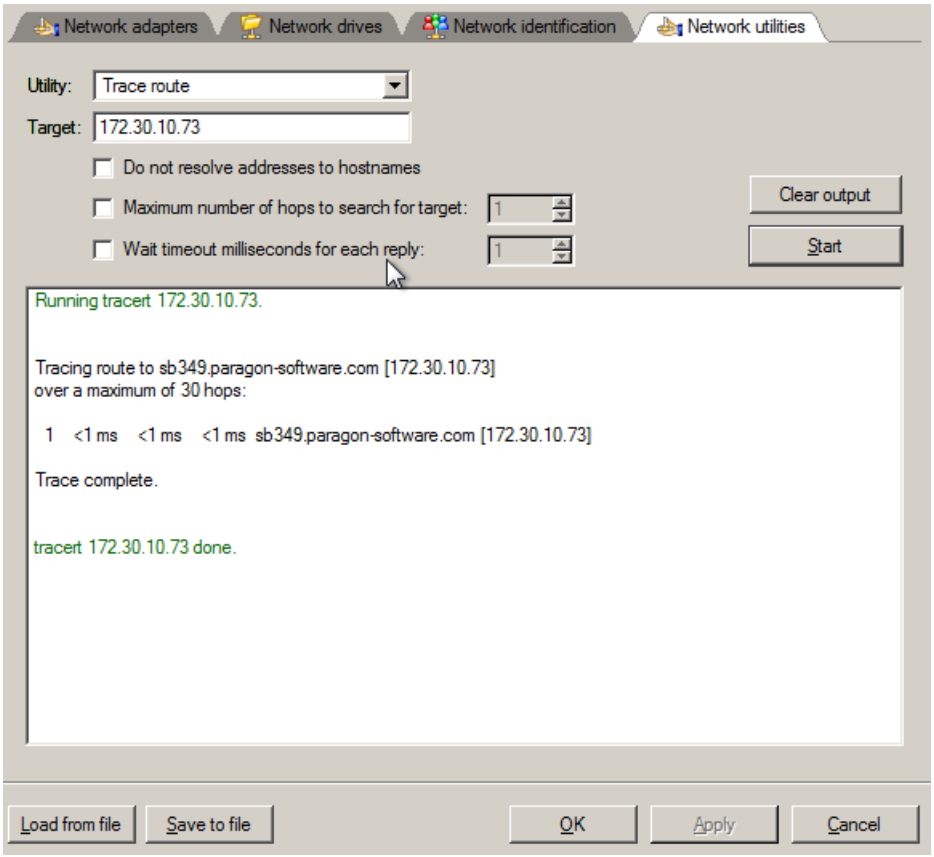

Network adapters
Network drives
Network identification
Network utilities
Utility:
Ping
Target:
www.google.com
Ping the specified host until stopped
Resolve addresses to hostnames
Number of echo requests to send:
1
Clear output
Start
Running ping www.google.com.
Pinging www.google.com [173.194.71.103] with 32 bytes of data:
Reply from 173.194.71.103: bytes=32 time=21ms TTL=128
Reply from 173.194.71.103: bytes=32 time=20ms TTL=128
Reply from 173.194.71.103: bytes=32 time=18ms TTL=128
Reply from 173.194.71.103: bytes=32 time=24ms TTL=128
Ping statistics for 173.194.71.103:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 18ms, Maximum = 24ms, Average = 20ms
ping www.google.com done.

- **Ping the specified host until stopped**. Mark the option to ping the chosen host for indefinite time;
- **Resolve addresses to hostnames**. Mark the option to display hostnames instead of IP addresses.
- **Number of echo requests to send**. By default the utility sends 4 echo requests, which you can modify however.

2. If you need to trace a route to some network host, please select **Trace route**, then type in the required IP address or its name. Click **Start** when ready.



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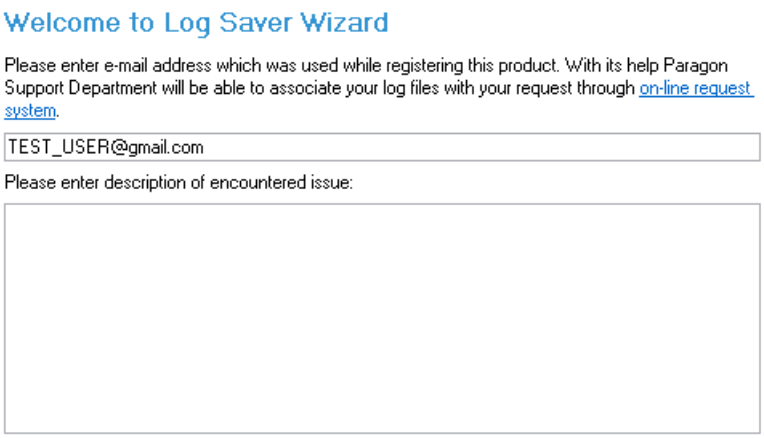
- **Do not resolve addresses to hostnames**. Mark the option to display IP addresses instead of hostnames.
- **Maximum number of hops to search for target**. By default the utility goes through maximum 30 hops when searching for the target host, which you can modify however.
- **Wait timeout milliseconds for each reply.** By default the utility waits 4 seconds for each echo reply message. If not received within the timeout, an asterisk (*) is displayed.

Saving log files

The program enables to simplify the procedure of sending support requests to the Paragon Support Team. In case of having difficulties with handling the program, you, with the help of this very function, can address the company support engineers and provide them with all the information they need such as the disk layout, performed operations, etc. in order to tackle the encountered problem. Information of that kind is stored in log files.

To prepare a log files package, please do the following:

1. Click **Log Saver**.
2. Provide an e-mail address used for registering the product, then give a detailed description on the encountered problem in the corresponding text fields. Please don't worry - we respect your privacy, so none of your confidential data will be exposed. This utility only collects the program's operation logs to help our Support Team find and tackle your problem. Click **Next** to continue.


Welcome to Log Saver Wizard
Please enter e-mail address which was used while registering this product. With its help Paragon Support Department will be able to associate your log files with your request through on-line request system.
TEST_USER@gmail.com
Please enter description of encountered issue:

Log files do not contain any confidential information on the operating system settings or the user documents.

3. Browse for the required location of the log files package or manually provide a full path to it. Click **Save** to initiate the operation.

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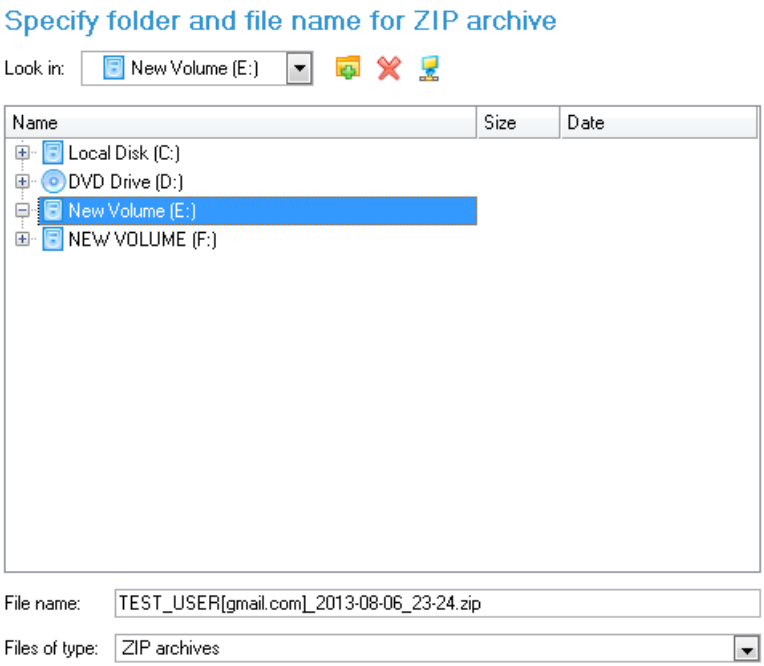

This function is also available under Windows.

How to Work with Bitlocked Volumes

Our product allows you to accomplish a number of operations on volumes encrypted by Windows BitLocker, but only when they are unlocked. Until that locked volumes will be recognized in the program's interface as 'Not formatted'. You can unlock this type of volumes only through Windows-native facilities:

- Graphical user interface for Windows,
- **manage-bde** command line tool for Windows and the WinPE recovery media.

Let's see how to unlock a volume encrypted by BitLocker in Windows and the WinPE recovery media.

In Windows

1. Initially we've got a bitlocked data volume **F:**, displayed as a volume under lock in Windows Explorer.

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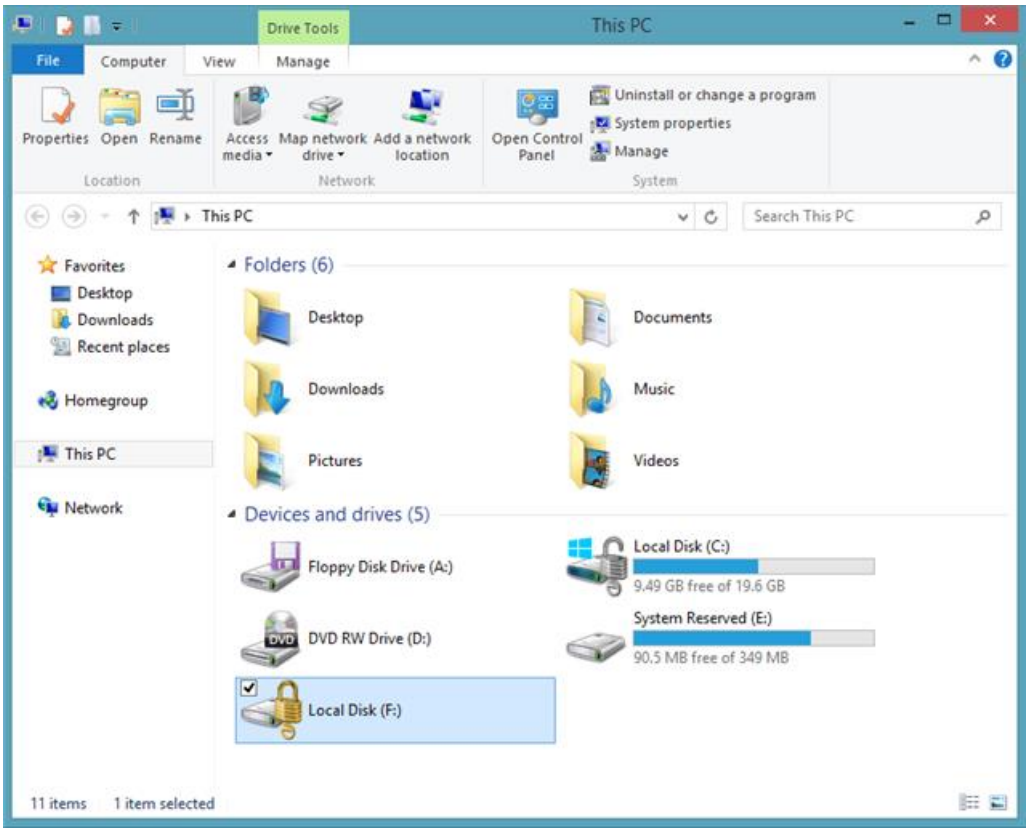
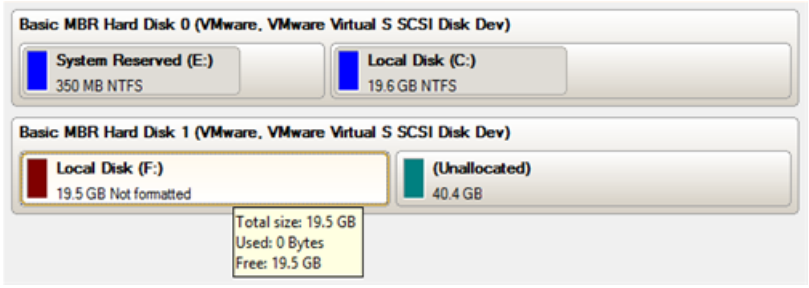


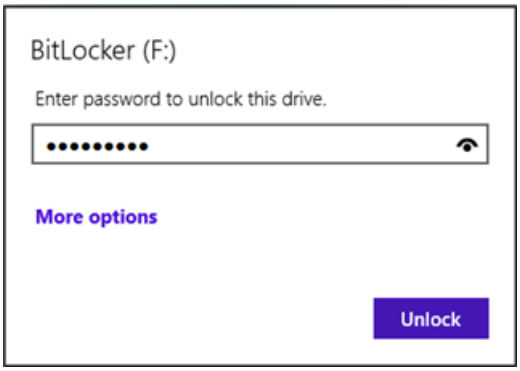
If going to the main launcher of our program right now (**Open Advanced Interface**), this very volume will be detected as 'Not formatted', thus no backup, restore, or copy operation will be available for it.


Basic MBR Hard Disk 0 (VMware, VMware Virtual S SCSI Disk Dev)
System Reserved (E:)
350 MB NTFS
Local Disk (C:)
19.6 GB NTFS
Basic MBR Hard Disk 1 (VMware, VMware Virtual S SCSI Disk Dev)
Local Disk (F:)
19.5 GB Not formatted
(Unallocated)
40.4 GB
Total size: 19.5 GB
Used: 0 Bytes
Free: 19.5 GB

2. To unlock it, please right click of the mouse on the corresponding volume in Windows Explorer, then select **Unlock Volume…** or use the corresponding option of the main launcher (**Partition > Unlock Volume**).

There are other ways to unlock a volume encrypted by BitLocker. For more information, please consult documentation provided by Microsoft.

3. Enter an unlock password.



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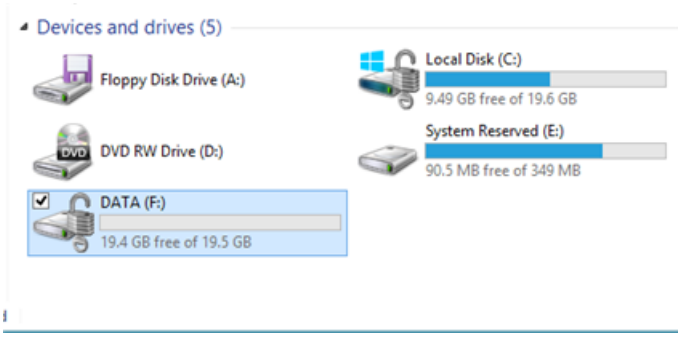
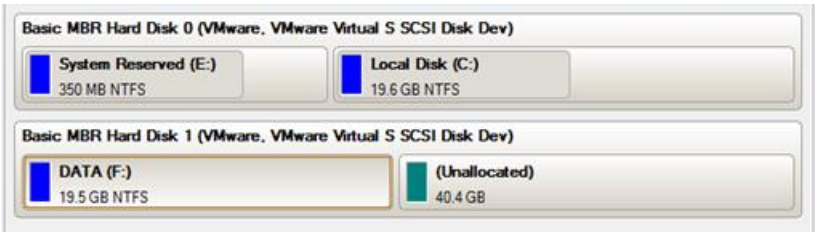
4. As a result, the volume should be unlocked.


Devices and drives (5)
Floppy Disk Drive (A:)
Local Disk (C:)
9.49 GB free of 19.6 GB
DVD RW Drive (D:)
System Reserved (E:)
90.5 MB free of 349 MB
DATA (F:)
19.4 GB free of 19.5 GB

If going to the main launcher of our program right now (**Open Advanced Interface**), the volume will be correctly detected and become available for operation.


Basic MBR Hard Disk 0 (VMware, VMware Virtual S SCSI Disk Dev)
System Reserved (E:)
350 MB NTFS
Local Disk (C:)
19.6 GB NTFS
Basic MBR Hard Disk 1 (VMware, VMware Virtual S SCSI Disk Dev)
DATA (F:)
19.5 GB NTFS
(Unallocated)
40.4 GB

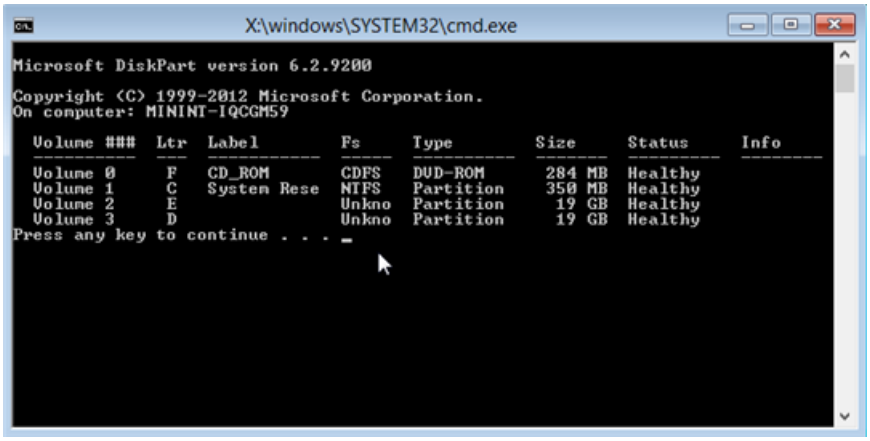
The same action can also be accomplished through the 'manage-bde' command line tool. For more information, please consult the next scenario.

In WinPE

1. Start up the computer from the WinPE recovery media.

To automatically boot from the recovery media please make sure the on-board BIOS is set up to boot from CD/USB first.

2. Go to the **Security and BitLocker Encryption** section, then select **List of Volumes**.
3. Define volumes encrypted by BitLocker (will be detected as 'Unknown'). If having several bitlocked volumes (just our case), you can pinpoint the required volume by its size.


X:\windows\SYSTEM32\cmd.exe
Microsoft DiskPart version 6.2.9200
Copyright (C) 1999-2012 Microsoft Corporation.
On computer: MININT-IQCGM59
Volume ### Ltr Label Fs Type Size Status Info
Volume 0 F CD_ROM CDFS DVD-ROM 284 MB Healthy
Volume 1 C System Rese NTFS Partition 350 MB Healthy
Volume 2 E Unkno Partition 19 GB Healthy
Volume 3 D Unkno Partition 19 GB Healthy
Press any key to continue . . .

If going to the main launcher of our program right now (**Open Advanced Interface**), you can see all unknown volumes detected as 'Not formatted', just like it was under Windows.

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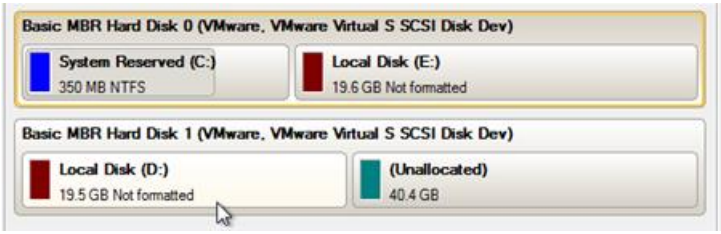
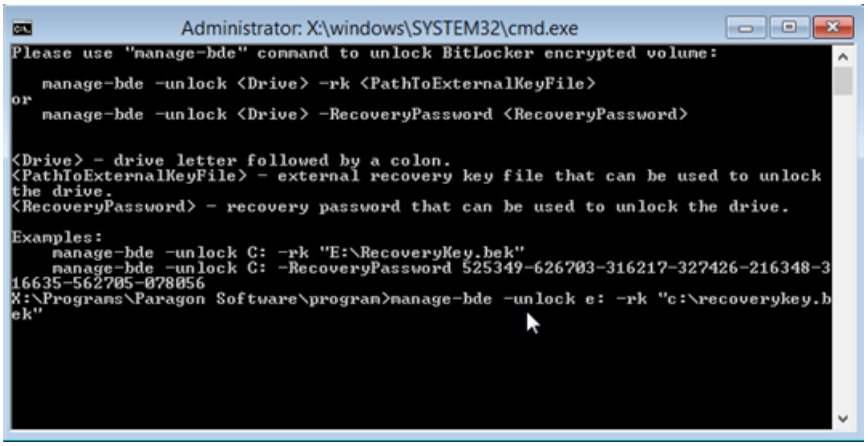


Drive letters in Windows and WinPE may differ, so please do not use them as identifiers.

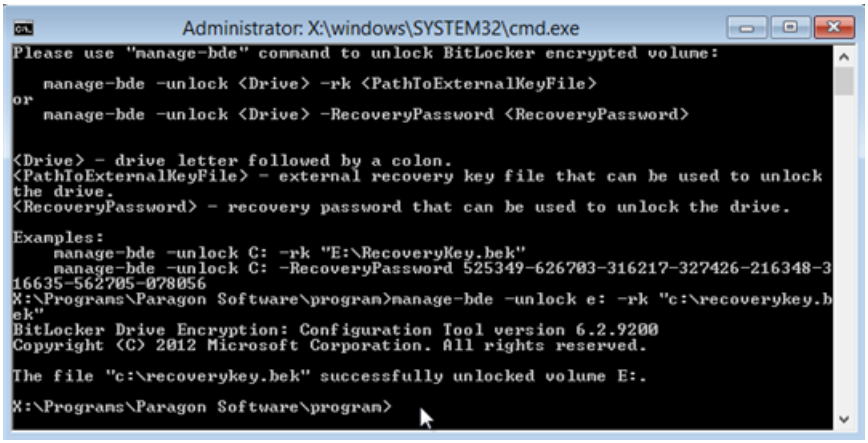
4. Close the dialog, then select **Unlock Encrypted Volumes**.
5. Use provided examples and grammar to unlock the required volume. If you'd like to see all commands of the **manage-bde** tool, please run it with the '–help' parameter (**manage-bde -help**).



As you can see on the screenshot above, we're attempting to unlock volume **E:** by providing a path to the corresponding recovery key (**recoverykey.bek**), which is placed on System Reserved (volume **C:**).

The same dialog can also be called from the main launcher (right click of the mouse on the required volume, then select 'Unlock Volume').

6. As a result, the volume should be unlocked.



If going to the main launcher of our program now (**Open Advanced Interface**), the volume will be correctly detected and become available for operation.

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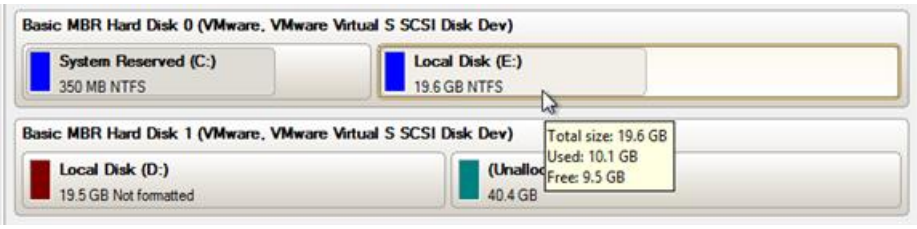
Basic MBR Hard Disk 0 (VMware, VMware Virtual S SCSI Disk Dev)
System Reserved (C:)
350 MB NTFS
Local Disk (E:)
19.6 GB NTFS
Basic MBR Hard Disk 1 (VMware, VMware Virtual S SCSI Disk Dev)
Total size: 19.6 GB
Used: 10.1 GB
Free: 9.5 GB
Local Disk (D:)
19.5 GB Not formatted
40.4 GB

Troubleshooter

Here you can find answers to the most frequently asked questions that might arise while using the program.

1. I try to run an operation, but the program claims my partition is in use and suggests restarting the computer.

   There are a number of operations that cannot be performed while your partition is in use (or locked in other words). Please agree to reboot your machine to make the program accomplish the operation in a special boot-up mode.

2. I run an operation and restart the machine as required, but it just boots back into Windows without accomplishing the operation.

   Please run 'chkdsk /f' for the partition in question.

3. I cannot create a new partition on the disk.

   There can be a number of reasons for that:

   - The program cannot create a new partition on a dynamic disk.
   - The program allows creating new partitions only within blocks of un-partitioned space. It cannot convert a free space on an existing partition to a new partition.

4. I cannot copy a partition.

   There can be a number of reasons for that:

   - The source or target disk you select is a dynamic disk;

   - 4 primary partitions (or three primary partitions and an extended one) already exist on the target disk.

5. I need to copy a partition. But when selecting a place where to make a copy, I always get a crossed circle sign no matter which partition is selected.

   The program enables to copy a partition only to a block of un-partitioned space. If you don’t have a block of free space on your hard disk, please delete or reduce an existing partition to accomplish the operation.

6. I cannot do anything with my USB flash drive. I get a crossed circle sign when trying to select any area on it.

   Some USB flash drives don't have the MBR (Master Boot Record), that’s the cause of your problem. To fix the issue please use the Update MBR function of our program or 'fixmbr' of the Windows installation disc to write a standard code to your flash drive.

7. When trying to back up my system the program asks to restart the computer.

   Most likely the Hot Processing mode is disabled. Please make it active in the program settings.

8. When backing up a partition with the VSS (Volume Shadow Copy Service) mode, the program throws "VSS could not be started for processed volume".

   Most likely you try to back up a FAT32 partition, which is not supported by VSS. Please use the Paragon Hot Processing mode instead.

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9. I cannot back up my hard disk to an external hard drive. Once started, the operation is aborted with the following error: Hard Disk management, Error Code 0x1100a. What is wrong here?

   The problem is that the Microsoft VSS service is set as the default Hot Processing mode in the program. But this service has not been started in your WindowsXP/Windows2003/Vista. Please start this service (right click on My Computer > Manage > Services > find Microsoft Volume Shadow Copy Service and make it active. Set also to start it automatically).

10. When running a backup operation with the Paragon Hot Processing mode enabled, I get an error: error code 0x1200e "Internal error during Hot Backup"

    Most likely your hard disk contains bad blocks. Please fix the issue with your HDD manufacturer's tool.

    You can find a name of the tool you need here: http://kb.paragon-software.com

11. When running a backup operation with the Microsoft VSS mode enabled, I get the following error: error code 0x12016 "VSS: can't read volume data”

    Most likely your hard disk contains bad blocks. Please fix the issue with your HDD manufacturer's tool.

    You can find a name of the tool you need here: http://kb.paragon-software.com

12. When trying to back up to a network share, I get the following error: "i/o error" or "can't open/create file"

    Please check whether you’ve got a permission to write to the selected destination or not.

13. When trying to restore a backup archive, I get the following error: "Can't restore to current selection" or "Archive does not fit"

    Most likely you’re trying to restore a backup of the whole hard disk to a partition or vice versa.

14. I set up a timetable for a task, but it fails to execute.

    There can be a number of reasons for that:

    - Windows Task Scheduler does not work properly. Check whether it is so or not by scheduling a simple task (call Notepad through scheduling);

    - You don’t have permission to write to the selected backup destination.

Glossary

Active Partition is a partition from which an x86-based computer starts up. The active partition must be a primary partition on a basic disk. If you use Windows exclusively, the active partition can be the same as the system volume.

In the DOS partitioning scheme, only primary partitions can be active due to limitations of the standard bootstrap.

The term **backup** originates from the time when the best way to protect valuable information was to store it in form of archives on external media. It’s become now a general notion to mean making duplications of data for protection purposes.

Bootable Archive is created by adding a special bootable section when backing up the data to CD/DVDs. Thus you will be able to restore the data from these archives without having to run the program, but by simply booting from these CD/DVDs.

Cluster is the smallest amount of disk space that can be allocated to hold a file. All file systems used by Windows organize hard disks based on clusters, which consist of one or more contiguous sectors. The smaller the cluster size, the more efficiently a disk stores information. If no cluster size is specified during formatting, Windows picks defaults based on the size of the volume. These defaults are selected to reduce the amount of space that is lost and the amount of fragmentation on the volume. A cluster is also called an allocation unit.

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Extended Partition is a partition type you create only on a basic MBR (Master Boot Record) disk. Extended partition is used if you want to create more than four volumes on a disk, since it may contain multiple logical drives.

File System Metadata. The servicing structures of a file system, which contain information about allocating files and directories, security information etc, are named the file system metadata. It is invisible for users and regular applications because its accidental modification usually makes a partition unusable.

Hard Disk Geometry. Traditionally, the usable space of a hard disk is logically divided into cylinders, cylinders are divided into tracks (or heads), and tracks are divided into sectors.

The triad of values {[Sectors-per-Track], [Tracks-per-Cylinder], [Amount-of-Cylinders]} is usually named the Hard Disk Geometry or C/H/S geometry.

Tracks and cylinders are enumerated from "0", while sectors are enumerated from "1". These disk parameters play an essential role in the DOS Partitioning scheme.

Modern hardware uses an advanced scheme for the linear addressing of sectors, which assumes that all on-disk sectors are continuously enumerated from “0”. To allow backward compatibility with older standards, modern hard disks can additionally emulate the C/H/S geometry.

Hidden Partition. The concept of a "hidden" partition was introduced in the IBM OS/2 Boot Manager. By default, an operating system does not mount a hidden partition, thus preventing access to its contents.

A method of hiding a partition consists in changing the partition ID value saved in the Partition Table. This is achieved by XOR-ing the partition ID with a 0x10 hexadecimal value.

Master File Table (MFT) is a relational database that consists of rows of file records and columns of file attributes. It contains at least one entry for every file on an NTFS volume, including the MFT itself. MFT is similar to a FAT table in a FAT file system.

MBR & 1st track of the hard disk is the 0th sector of the disk. MBR (Master Boot Record) contains important information about the disk layout:

- The used partitioning scheme;

- The starting records of the Partition Table;

- The standard bootstrap code (or the initial code of boot managers, disk overlay software or boot viruses).

Generally, the 0th sector is used for similar purposes in all existing partitioning schemes.

The MBR capacity is not sufficient to contain sophisticated boot programs. That’s why the on-boot software is allowed to use the entire 0th track of the disk. For example, boot managing utilities such as LILO, GRUB and Paragon Boot Manager are located in the 0th track.

Partition ID (or File system ID) is a file system identifier that is placed in the partition. It is used to quickly detect partitions of supported types. A number of operating systems completely rely on it to distinguish supported partitions.

Partition ID is saved in appropriate entries of the Partition Table and takes only 1 byte of space.

Partition Label (or Volume Label) is a small textual field (up to 11 characters) that is located in the partition's boot sector. This value is used for notification purposes only. It is detectable by any partitioning tool including the DOS FDISK utility.

Modern operating systems save it within a file system, e.g. as a special hidden file. Thus it is able to contain a relatively large amount of text in multiple languages.

Partitioning Scheme is a set of rules, constraints and format of the on-disk structures to keep information on partitions located on a hard disk.

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There are known several partitioning schemes. The most popular of them is the so-called DOS partitioning scheme. It was introduced by IBM and Microsoft to use multiple partitions in the disk subsystems on IBM PC compatible computers.

Another popular partitioning scheme is the so-called Logical Disks Model (LDM) that originates from the UNIX mainframe systems. Veritas Executive accommodates a simplified version of LDM to the Windows 2000 operating system.

Windows 2000 and XP support two quite different partitioning schemes: the old DOS partitioning scheme and the new Dynamic Disk Management (DDM). The problem is that earlier versions of Windows do not support DDM. In addition, most hard disk utilities do not support it as well.

Recovery Media is a CD/DVD disc, a USB flash card or even a floppy disk from which you can boot for maintenance or recovery purposes.

Root Directory is the top-level directory of a formatted logical drive to include other files and directories. In modern file systems (Ext2/Ext3, NTFS and even FAT32) it does not differ from other directories. This is not the case for old FAT12 and FAT16 file systems.

Serial Number. In the DOS partitioning scheme, every hard disk and every partition has a 32-bit serial number represented by an 8-figure hexadecimal value. It is stored in the MBR and its value is assigned when the MBR sector is initialized by Microsoft standard disk managing tools, such as Windows Disk Administrator and the FDISK utility.

In fact, a hard disk's serial number is not important for most operating systems and software. It is known that Windows NT, 2000 and XP store its value in the database of assigned drive letters.

A partition's serial number is stored in its boot sector (in FAT16, FAT32 and NFTS file systems). Its value is assigned when the partition is formatted. It does not play an important role for most operating systems and software as well.

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